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# THE MEDICAL JOURNAL OF AUSTRALIA

VOL. II.—9TH YEAR. SYDNEY: SATURDAY, SEPTEMBER 2, 1922. No. 10.


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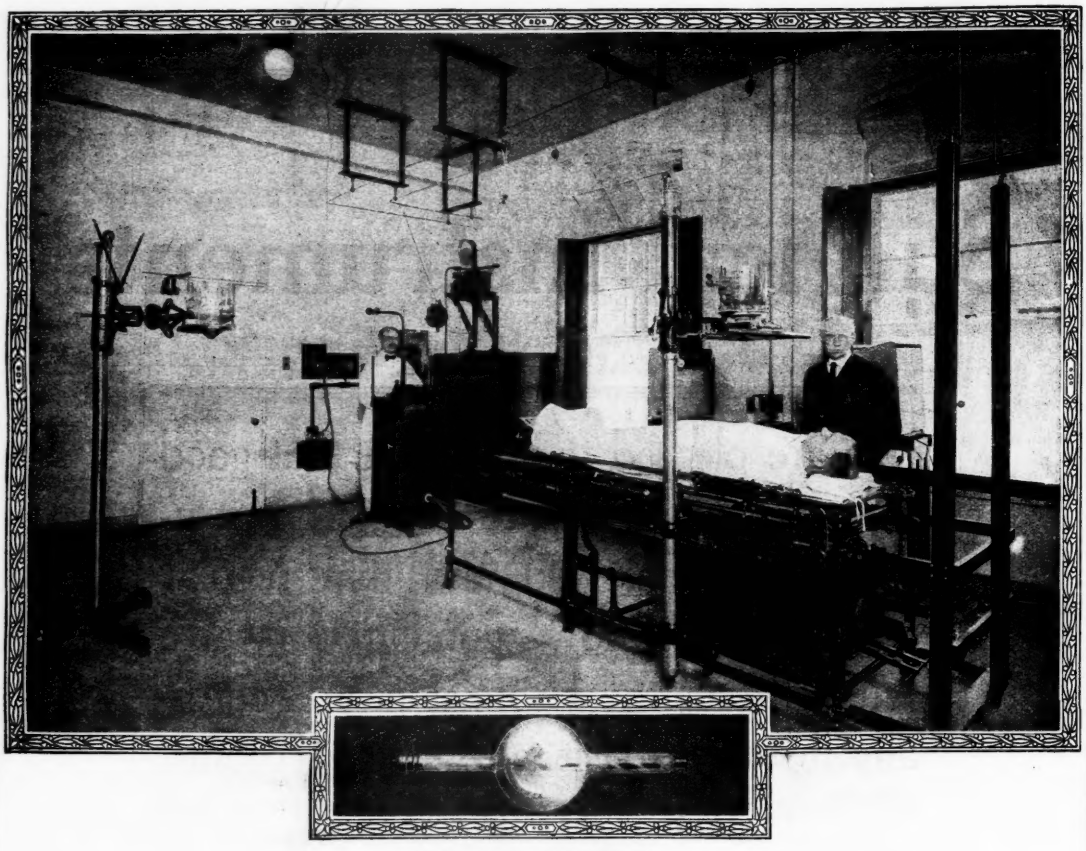

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## POLIO-ENCEPHALITIS.[1]

BY J. V. DUHIG, M.B. (SYDNEY),
*Brisbane.*

A DESCRIPTION of the pathology of polio-encephalitis involves a discussion of the filterable viruses, the study of which has been put on a sound practical basis by the work of Flexner, Levaditi and others in recent years. Our conceptions of the ætiological agents in infectious disease are constantly widening, not the least interesting addition to our knowledge being that of the viruses of the ectodermoses.

The isolation and study of these viruses have been brought to such a point by the work of Flexner, Strauss, Hirschfeld and especially by that of Levaditi that the last named has felt justified in grouping together such diseases as epidemic encephalitis (*encephalitis lethargica*), herpes, rabies, vaccinia, polio-myelitis and polio-encephalitis under the title "ectodermoses," since they all have certain characters in common and especially that of possessing a selective affinity for structures derived from the embryonic ectoderm.

By analogy he calls "mesodermoses" those diseases of bacterial origin with affinity for mesodermic structures, as typhoid, dysentery, tuberculosis. The ectodermoses are caused by viruses which are filterable and invisible, while the mesodermoses are caused in general by bacteria, fungi, protozoa and spirochætæ, though syphilis and ictero-hæmorrhagic jaundice would be intermediate, as possessing affinity for structures derived from both the embryonic layers in question.

Further differentiation is based on the cellulo-humoral responses; in the mesodermoses in general the immunity is of the phagocytic type, while the ectodermoses produce a refractory condition the mechanism of which is still undetermined.

The site of election varies within the group; for instance, vaccinia is the least neurotropic, while polio-myelitis is the most exclusively neurotropic; epidemic encephalitis and rabies occupy intermediate positions, possessing affinities both for epithelial and nervous tissue. The viruses vary also in immunity reactions and pathogenicity for laboratory animals, which differences afford a basis for differential laboratory diagnosis.

The viruses have been isolated and their special effects studied in laboratory animals. In general their characters are set out in the following:

### Cultural Characters.

(*a*) Pathogenicity for laboratory animals. The virus of polio-myelitis and polio-encephalitis is

[1] Read at a meeting of the Queensland Branch of the British Medical Association on May 25, 1922.

pathogenic for the monkey only, that of epidemic encephalitis (*encephalitis lethargica*) for the guinea-pig and rabbit, being only slightly or not at all virulent for the monkey.

(*b*) The virus is filterable, can be preserved in glycerine, is destroyed by heat at 56° C. and is virulent for varying periods after the death of the animal from which it was isolated at death. The period for *encephalitis lethargica* is forty-eight hours.

(*c*) The virus can be transmitted from animal to animal by injection of infected material by the appropriate route, *e.g.*, by injection into the cornea after scarification in the case of *encephalitis lethargica*, by subdural inoculation in the case of polio-myelitis and encephalitis, or it may be transmitted in the case of these diseases by inoculation by the route described, of nasal swabs or washings from "carriers."

(*d*) The virus in the case of these diseases exists in the brain and cord, but is absent from the blood. It is eliminated by the secretions of the naso-pharynx, especially if the mucous membrane be damaged, probably following a course along the olfactory nerves.

(*e*) There are undoubtedly attenuated strains of the virus.

(*f*) The virus can be kept in a living state *in vitro*, in symbiosis with tissues for which it has a selective affinity.

There are other cultural characters with which we are not now so intimately concerned. (For details see "Bibliography.")

#### Path of Infection.

It has been proved experimentally that the virus of polio-myelitis is capable of penetrating the nasal mucosa, if this membrane has been previously damaged, and that the healthy mucosa opposes a certain amount of resistance to its penetration. This resistance may be complete and effective, but if the mucosa be inflamed or damaged by trauma the virus reaches the brain over the barrier.

From this it results that for polio-myelitis, polio-encephalitis and *encephalitis lethargica* the naso-pharynx constitutes the principal if not the only primary focus of infection and is therefore the focus it is most important to deal with and render innocuous if efficacious prophylaxis is desired.

Pettersen and Kling have recovered the virus from the naso-pharynx of absolutely healthy "contacts" and very often it is possible to establish the presence of the disease in persons who have had a mild coryza or angina; it would seem that "carriers" are recruited chiefly from persons with these unsuspected or abortive attacks of the disease.

It would seem then that the virus crosses the barrier of the nasal mucosa consequent upon a mild inflammation, multiplies in the olfactory apparatus and reaches the brain along the olfactory nerves, the reverse route being followed during the course of the disease or convalescence.

#### Immunity and Specific Therapy.

Flexner, Levaditi, Landsteiner and others have shown that the serum of monkeys spontaneously recovering from polio-myelitis is capable of neutralizing the virus *in vitro*.

Netter showed also that the serum of convalescent human beings also possesses this power.

There does not seem to be any cross-immunity between this disease and any other of the group of neurotropic viruses as exists between herpes and epidemic encephalitis.

Flexner and Lewis used convalescent monkey serum with definite results.

Netter, in France, treated thirty-four patients with polio-myelitis by subdural injections of convalescent immune serum.

Flexner and Amoss found immune serum valuable, even when injected intravenously.

Treatment along these lines is indicated either by serum of animals immunized experimentally or by human or monkey convalescent serum.

#### Pathology and Histology.

The virus of polio-myelitis centres its attack upon the spinal marrow or cerebral cortex.

The disease is characterized by profound disturbance of the motor and sensory neurones—a neuronolysis and neuronophagia of which the mechanism would appear to be as follows:

The nerve cells show degenerative changes at a time when the perivascular infiltration is relatively slight in amount, indicating that the virus or its toxins act primarily on these cells and that the neurone degeneration is not necessarily dependent on the vascular lesions. The changes in the meninges and vessels are due probably also to the direct action of the toxin and are not a result of the neurone change. The virus invades the nervous system by way of the perivascular lymphatics and enters the nerve cells and it or its toxins bring on a primary degeneration of the neurone and an inflammatory reaction around it, composed of polymorpho-nuclear and mono-nuclear cells. These in turn degenerate under the necrosing action of the toxin, this primary process resulting in a mass of débris destined to be resorbed. The neuronophagia is carried out by the polymorpho-nuclear cells, in turn resorbed by the macrophages and poly-blasts. The essential feature is the poly-nuclear reaction in polio-encephalitis; it is purely infective and differs in essential particulars from the reaction to the virus of epidemic encephalitis (*encephalitis lethargica*). The inflammation is first a local or general lepto-meningitis with polymorpho-nuclear cell exudate around the vessels. In the cord this is first most evident about the arterioles of the anterior commissure, passing thence everywhere throughout the cord and not only into the anterior horns, as was formerly thought, along the vessels with intense hyperæmia and perivascular cell proliferation. (The term anterior polio-myelitis is a misnomer). The vessels may thrombose and rupture. It has long been recognized that similar changes are not peculiar to the cord, but may occur in the brain, the disease then being termed polio-encephalitis (von Strümpell). This has widened our conception of the disease and various clinical types are recognized, varying only in severity and site, but not in ætiology or pathology. Lesions similar histologically in all respects occur in the medulla involving the nuclei of the cranal

nerves and we call this polio-encephalitis, the name leading to some confusion with epidemic encephalitis.

If recovery takes place, the injured ganglion cells disappear completely and after the fading of the inflammatory reaction, the site is occupied by dense scar tissue.

In other organs less characteristic lesions are found.

There may be minute focal necroses of the liver cells, with lymphocyte accumulation. Similar changes in lymphatic glands have been described. In the glands the sinuses are filled with large phagocytic cells as in typhoid. Cloudy swelling of the liver and kidneys is usual.

### Humoral Changes.

The blood shows a high leucocytosis of the polymorpho-nuclear type.

The cerebro-spinal fluid is clear, with a few cellular elements, in contrast to the conditions existing in *encephalitis lethargica*, where we find a moderate lymphocytosis.

### Summary.

Polio-encephalitis and polio-myelitis are acute inflammatory and degenerative lesions of the neurones, caused by a filterable virus, and are exclusively of the neurotropic type of "ectodermosis." The virus is propagated by healthy carriers or persons recovered from an abortive attack, inhabits the nasopharynx of these carriers and selects the nasal mucosa as the primary focus in victims of the disease. The virus is recoverable, can be cultivated for varying periods, varies in virulence and is capable of reproducing the disease in monkeys. Other laboratory animals are refractory.

The serum of convalescents has definite neutralizing power *in vitro*.

The neurone lesion is due to a direct primary destruction of the cell by the virus or its toxin and is not secondary to inflammation or altered nutrition resulting from defective blood supply.

### Notes on Nomenclature.

Much confusion has arisen between polio-encephalitis and *encephalitis lethargica*, clinically and otherwise from the similarity of their manifestations and the looseness of nomenclature. Polio-encephalitis and polio-myelitis are similar in all respects, ætiologically and histologically, and both differ in these respects from *encephalitis lethargica*.

I would suggest that a group name be coined to cover all diseases caused by these filterable viruses—a name embodying their ætiology—and that other names be coined for *encephalitis lethargica* and for polio-encephalitis and polio-myelitis of such a kind as to indicate their ætiology, the identity of the last two and their essential difference from the first named.

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## THE EPIDEMIOLOGY OF EPIDEMIC ENCEPHALITIS.[1]

By W. A. Sawyer, M.D.,
*Senior State Director, International Health Board, Rockefeller Foundation; Director of the Australian Hookworm Campaign.*

It is with reluctance that I participate in this discussion, as I have no first-hand knowledge of the present outbreak of encephalitis, but I am assured by Dr. McDonald that some general remarks on the public health aspects of epidemic polio-myelitis and encephalitis would be in place. Unfortunately, the control measures directed against epidemic polio-myelitis and encephalitis, like those against influenza, have not been very successful and health departments are still groping for more effective methods. In the meanwhile, it becomes highly important that the diagnoses should be definitely established and as much as possible learned through studies in the field and in the laboratory with regard to the characteristics of the outbreaks and methods of their spread.

The preceding speakers have limited themselves largely to the very important subject of diagnosis made at the bedside and in the laboratory and I hope that later speakers will bring evidence of the character of the outbreak considered as a whole. I realize that a serious handicap to epidemiological study of the present outbreak lies in the facts that the law does not require the reporting of the disease in question and that voluntary reports are far from complete.

With the identity of the disease thoroughly established and reporting fairly complete, it is important that the epidemiologist should tabulate all data obtainable through visits to the field and through questionnaires. Through investigation cases erroneously included in the group can be excluded. The picture of the disease can be clarified by tabulation with regard to the incidence of its several manifestations, the distribution of cases by localities, by age incidence and by season and weather conditions. Of even greater interest to the epidemiologist would be studies of dates of onset, the mapping and charting of data to reveal the paths and rates of spread and also careful inquiries to reveal possible human carriers. It will be apparent that such studies, to be effective, require a central clearing house for data and the constant attention of a trained epidemiologist with the powers and prestige of a health official and the support of a public health laboratory.

Studies of paths of infection and possible carriers are easier to trace in small and isolated rural communities, like many parts of Queensland, than in large cities where the number of persons in contact is so great. In 1913 an outbreak of polio-myelitis occurred in the mountainous parts of northern California and another in a rather isolated seaport town and the surrounding rural district. The opportunity was afforded to investigate an outbreak of infantile paralysis in its simplest relationship as far as contagion was concerned and the State Board of Health assigned me to the investigation. In this investiga-

[1] Read at a meeting of the Queensland Branch of the British Medical Association on May 25, 1922.

tion I was impressed with the ease with which a probable or possible path of infection by direct contact or through adult carriers could be demonstrated, although proof was not possible. In several instances two children in the same or adjacent houses were infected in rapid sequence. The adult members of the households of infected children, often the fathers, seemed in a number of cases to have transmitted the infection from one household group to the other through contact at their common places of work. The investigation strengthened the evidence that the human carrier was the means of conveying infection and was distinctly against the various other theories of the time.

Many excellent studies of epidemic polio-myelitis have been made in various parts of the world and a few of *encephalitis lethargica*. In the spring of 1919 an epidemiologist of the United States Public Health Service was assigned to the task of gathering all available information on *encephalitis lethargica* in the United States and analysing the data. He visited the States having most of the cases, gathered the information already collected by the State Boards of Health, interviewed physicians and examined many patients. As always in such investigations a considerable number of reported cases had to be thrown out of the series. Out of 222 reported cases, thirty-nine were not *encephalitis lethargica* and two were of doubtful identity. It will be of interest to note the diseases which were erroneously reported. They were cerebro-spinal meningitis, brain abscess, cerebral syphilis, tuberculous meningitis, epilepsy, epidemic polio-myelitis, apoplexy, hysteria and one case of acute alcoholism. He found no secondary cases in the households of the patients. I mention this study to illustrate the advantage of having all facts brought together and analysed by one competent epidemiologist responsible through a health department to the public. The full report can be found in the *Public Health Reports* for February 11, 1921.

While the search for effective means of controlling epidemic polio-myelitis and epidemic encephalitis has not yet been very successful, research has quickly disproven many theories which have had their vogue and has thus saved much useless annoyance and public expense. For example, in 1912 just after a severe epidemic of infantile paralysis in Los Angeles the announcement was made by high authority on the basis of experiment that the stable fly (*Stomoxys calcitrans*) could transmit the disease. The medical profession and the health officers were at sea. It seemed to many that all the work on the supposition that carriers transmitted the disease had been wasted and that great efforts should be made to exterminate the stable fly, a difficult matter, as its breeding habits were different from those of the house fly and would necessitate new control methods. The State Board of Health deferred judgement and together with the University of California made it possible for Professor Herms and myself to perform a series of laboratory experiments which convinced us that the stable fly was not a common factor in spreading the disease. The health authorities were saved from starting on a wrong course and the wasting of considerable money was prevented. The confirming or disproving of theories which would determine methods of prevention, is a public health responsibility.

Among measures to prevent epidemic polio-myelitis we have at present only those which limit contact with patients and possible carriers and those which prevent the transfer of nasal and buccal secretions, as, for example, through the use of common cups, sneezing or over-crowding. It is common practice to isolate patients and their immediate attendants and to disinfect all discharge from nose, mouth and bowels. The virus of epidemic polio-myelitis has been found in the bowel as well as in the nose and throat.

## FASHIONABLE MIDWIFERY.[1]

BY J. KYNASTON COUCH, M.D.,
*Gynæcologist, Out-Patients' Department, Perth Hospital; Physician, King Edward Maternity Hospital, Perth.*

SOME years ago I had the honour of addressing this Branch on a subject entitled "Axis Traction Forceps *versus* Telephone and Motor-Cars." The theme that ran through this paper was: "Go home and return when sent for, but do not use forceps."

I was appointed to King Edward Maternity Hospital upon its foundation six years ago and there I have put into practice the views I then held and still hold with gratifying success.

The midwifery world has recently received a few shocks in procedure, hence my desire to bring before your notice some methods of "fashionable midwifery" and compare them with those we practise in our hospital.

A few years ago an obstetrician in Edinburgh said he used forceps in 75% of his cases. Now, another conjurer has appeared on the scene and last year his paper created a great stir in America. He, in twelve months, delivered 1,113 women, 920 by version, 400 being primipara and 520 multipara. In addition to the 920 versions, there were eighty abdominal Cæsarean sections, *i.e.*, one in fourteen, two vaginal hysterotomies, thirty-five breech cases and thirty-nine instrumental deliveries. He had forty-one still-births. He thinks complications due to the cord are the prolific cause of still-births. Only two mothers died after version. I should like to know how he avoids prolapse and expression of the cord in such a number of versions. A description of this meddlesome practitioner's method of version is as follows:

The patient is fully anæsthetized and in the cross-bed dorsal position. The left hand is used without reference to the position of the child. During delivery the legs are allowed to drop into a modified Walcher's position. The cervix must be either dilated or easily dilatable; the membranes are ruptured and the arm acts as a plug to prevent the *liquor* running away. Both feet are pulled down to the vulva. The body is expelled by uterine action.

[1] Read at a meeting of the Western Australian Branch of the British Medical Association on June 21, 1922.

When this paper was read by a prominent obstetrician, it was met with the strongest opposition. Just imagine a one in fourteen Cæsarean section rate! Years ago a practitioner in Perth turned every child, provided it waited for him to take his coat off. This man had a big run of sepsis, as it was in the pre-glove days.

Now Dr. De Lee, one of the foremost obstetricians in the world, whilst running down Potter, uses forceps in every case as soon as the head comes down on the perineum, does a para-vaginal section, waits five minutes, expresses the placenta into his hand and give more morphine.

Now, having considered the operations, let us consider the result on the babies. Holland, of London, a few years ago made a *post mortem* examination on 168 still-born babies. He found that 50% had died from intra-cranial injuries, either from lacerations of the brain or hæmorrhage into the membranes. Have you heard the cephalic cry of the newborn babe when you are visiting a private hospital? In a day or two you will probably be told the child died from convulsions. The doctor with a conscience knows the cause of those convulsions.

I found, when using Milne-Murray axis traction forceps, that it was considerably safer not to screw them up when extracting. Consider for a moment the manner in which forceps are frequently used by the practitioner. He stands or sits and puts his feet against the bed and pulls with his whole weight. Is this necessary! I say emphatically: "No!" Does Nature shoot children into the world at the rate they are pulled out by some practitioners? If you use forceps, imitate Nature's way, if you can.

I consider "twilight sleep" to be one of the greatest blessings introduced into midwifery of recent years. Of the different preparations we have used at King Edward Hospital, we find "Omnopon" the most satisfactory. The patient is placed in a darkened and quiet room. We use the memory test to find out the effect of the drugs and never use morphine if the patient is near the end of her labour, thus avoid the risk of having a blue baby. I have seen many women who have not the slightest recollection of the baby having been born.

With regard to the use of pituitrin, it appears at times to be the most wonderful drug and at others it has not the slightest effect. The same thing occurred when we gave morphine to quieten the pains in the "pre-twilight" days, which enabled the practitioner to go to bed. Then the woman would have two pains and the child was born before the doctor could wipe his hypodermic needle. I know that wonderful charts are shown at drug houses to show the results of the use of pituitrin. Three cases of rupture of the uterus have been brought to my notice, the use of this drug being blamed for it. Upon inquiry, however, I have found that an operation, such as version or a high forceps, had been done. Pituitrin should only be used when the *os uteri* is dilated and the roadway clear.

#### Induction of Labour.

I have seen labour induced at the seventh month by a senior practitioner owing to the patient being only fifteen years of age. I have yet to see a case of difficult labour in a patient of this age. I have had much difficulty in bringing on labour in eclampsia by bougies. There is no doubt in my mind that the induction of labour, although at the time it may be satisfactory, has a large percentage of sepsis and its sequelæ to its credit.

#### Care of the Perineum.

There are three methods of protecting the perineum: (*i.*) By leaving it alone. (*ii.*) By operative interference. (*iii.*) By supporting the perineum.

I cannot endorse the late Mr. Lawson Tait's remark that when he was young he supported the perineum and when he was old it supported him.

Even to save the perineum, the keen, energetic operating practitioner is not content in doing an episiotomy; he wants to do a Shuchard's para-vaginal section. Do you think this necessary? Sew up a perineum when it ruptures by all means, but wait for it to rupture first.

#### The Third Stage.

Much harm is done by the premature squeezing and massage of the uterus to get the placenta away. All the books teach us to place our hand on the fundus as soon as the child is born and to hold it there, to see if it becomes over-distended with blood, but why, may I ask? The retroplacental hæmatoma must form before the uterus can expel the placenta, therefore it is bound to rise by its normal mechanism. Leave the fundus absolutely alone for twenty minutes is my teaching and ascertain if the placenta is in the lower uterine zone or in the vagina before you attempt to express it. Even in such an operation as ordinary expression, how many practitioners take the trouble to ascertain where the placenta is before they attempt to express it? Even here the enthusiastic practitioner must meddle and inject the umbilical vein with warm saline solution, as suggested by Sklavounis. If this were constantly done, I feel sure we should meet with many cases of embolism. When the placenta has left the uterus or is in its lower zone, a combination of expression and gentle traction on the cord is quite safe, but keep your hand out of the vagina!

#### Abdominal and Vaginal Examination.

Instead of the "four grips" method of the Rotunda, I use a combined bimanual examination in cases where I have been unable to find out all I want to by the "grips." There is one method of dividing the fundus into four quadrants and finding out in what direction the feet point, but the method I recommend is to make a vaginal examination first, then do a "Munro-Kerr," with the thumb over the *symphysis pubis*, in order to ascertain the amount of overlie of the parietals. With the left hand make a bimanual examination of the head and feel for the jaw, to find out the amount of flexion. Now feel for the buttocks with your left hand. You will have a wonderful revelation of the lie and presentation of the unborn child. So much do I value and appreciate this method that I prefer it to pelvimetry and leave a woman with every confidence as to the prognosis. Try it and you will appreciate it! When I demonstrate to a class of nurses, I frequently use

the "grips" and "Munro-Kerr" with my thumb without any vaginal examination.

### Pelvimetry.

I used to carry a pelvimeter, but I usually do all this work in my ante-natal examination. At the bedside, I hold my first fingers on each anterior spine and measure between them for the interspinous diameter and my palms are held over each crest for the intercristal diameters. I find I get results equal to my "Duncan" or "Skutsch" pelvimeters.

### Abortions.

I very frequently refuse to curette at the Perth Hospital. If a woman has miscarried, she is told the most alarming stories of the danger of blood poisoning if she is not curetted. Unless there is hæmorrhage, I really cannot understand why an abortion should require curettage. A high temperature may cause her attendant to suggest curettage, but in this instance more than in any other, the less you interfere the better; the risk of causing a septicæmia is very great. I am confident that no woman can have a septic abortion or an abortion accompanied with fever unless she has had passed an instrument or its equivalent, the septic finger of her attendant.

In a septic abortion, do not touch it until the temperature has been down seven days! Allow it to decompose and break away and perhaps be expelled, but do not touch it with a curette! I repeat, do not use an instrument in a miscarriage unless there is a hæmorrhage! I have never regretted leaving one alone, but have regretted interfering.

### Septicæmia.

How much safer is the work of the obstetrician when the head is on the perineum than when it is above the brim or just engaged. As long as the forceps are kept in the vagina, sepsis is rare, but once you pass the blades inside the cervix the element of danger sets in, the germs lying in the lower part of the vagina being carried in. The amnion protects the uterus in the same way that a towel protects the skin round a wound. Hence the danger when the hand is put inside the uterus, but outside the membranes, when the danger is increased a hundredfold.

One reason why the nurses at King Edward Hospital get such good results is that they never dress wounds. Why should a man dress a whitlow and then extract a placenta in the same half hour! Even with gloves, he cannot put them on unaided without contaminating them. Is every case of midwifery to be turned into a surgical operation with its risks? A few years ago I was taken very much to task when I made the statement that the attendance of a practitioner at a birth frequently turned a normal labour into an abnormal one. How is it possible for men with large general practices, with long lists of visits and consultations, actually to attend or even to supervise an ordinary case of labour? I am only repeating a general statement in the medical papers of recent years when I say that it means that the general practitioner will be compelled to do one of the following: (*i.*) Refuse midwifery or (*ii.*) simply superintend and allow the nurse to do the actual work.

In this actual work I include ante-natal observation, urine testing, blood pressure, determination of the size of the passage and the relative size of the passenger. During the last fifteen years I have seen at the Perth Hospital a large number of cases of septicæmia, the majority of which I say are due to meddlesome and unwarranted midwifery. This last year I have seen three cases of fistula caused by operative interference in normal pelves. When a woman with her fourth child is torn in all directions, with pus pouring out from a large wound by the side of the bladder, there is something seriously wrong in the State of Denmark. Why any interference should have taken place, excepting to save the practitioner's time, I do not know. Only a few years ago a patient with septicæmia was sent in to be curetted ten days after delivery. She was too ill to be done and at the *post mortem* examination pus was found in the chest and abdomen. I have had many patients with sepsis who have lasted from one to three or four months with temperatures of 40° C. and 40.5° C. (104° F. and 105° F.) for weeks. Some have left the hospital with the loss of a joint and a state of permanent ill-health.

The main line of treatment is one of absolute inactivity as far as any local treatment is concerned and yet no patient is ever admitted to the Perth Hospital unless she has been scraped, curetted and washed by the practitioner. It is many years since I did any operation on a patient with sepsis. Previously I have done such operations, including the tying of veins, hysterectomy and so forth, but I find my present results are infinitely better. I treated an old man, seventy years of age, with a carbuncle on his neck 12.5 centimetres (five inches) in diameter on the same lines; applied dry gauze, but made no incision or excision and applied no disinfectants. The man did perfectly well. If we could be persuaded to treat our male patients with septicæmia (known as gonorrhœa) by masterful inactivity I am sure we should get infinitely better results than by all this excessive local treatment. I believe the results in this "Cinderella" of the medical specialties are much worse than they were when I began practice. Is there a branch of medicine so badly taught as that of midwifery? I feel sure that in the future the bulk of midwifery will be done by highly trained midwifery nurses.

### Results of Expectant Treatment.

During the last twelve months at the King Edward Memorial Hospital, where the bulk of the work is done by the matron, sisters and nursing staff, we had 580 patients. Dr. Clement and I, being the honorary medical officers, are only called down in any untoward cases or accidents.

In these 580 cases we only used forceps on eight occasions. We had fourteen persistent occipito-posterior (all the mothers and infants survived) and two face presentations with the same results, although no forceps were used, nine twins, eight cases of eclampsia and eighteen breech presentations.

Only two Cæsarean sections were performed, that is, 1 in 290 as against 1 in 14 of Potter's series.

The usual proportion of hæmorrhages occurred. We had no cases of sepsis and no deaths from any cause.

Well, gentlemen, when you hear such a record as this, what is the occasion for following in the footsteps of Potter or De Lee?

In six years we have only had five cases of sepsis, with one death, in 2,500 cases and had ninety-one still-births, including twenty-six macerated fœtuses.

Please note that we get a large number of emergency cases of hæmorrhage, eclampsia, etc..

I trust these words of mine may be appreciated. Once more I repeat: practice ante-natal supervision, use "twilight sleep" and employ a good, patient nurse!

You can by abdominal and vaginal examination in 95% of cases know from the onset how the case will proceed and when in doubt you can put it through the test of labour. Is the midwifery of the future to be obstetrical surgery, surgical obstetrics or scientific obstetrics?

Leave to Nature her own method of driving out an ordinary-sized passenger through an ordinary-sized passage!

## THE APPLICATION OF THE RECENT DISCOVERIES CONCERNING VITAMINS OR ACCESSORY FOOD FACTORS.[1]

By JOHN DALE, M.D., B.Sc.,
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THE existence of at least three distinct vitamins is generally accepted as proven. The proof rests on experimental evidence, which indicates that their presence in the food of certain animals is necessary for the continued healthy life of the species of animals concerned. It seems that the various species of animals may differ in regard to the degree or intensity of their need of each of the three substances, rats, for example, having a very low requirement for the water-soluble C factor, whilst guinea-pigs exhibit a relatively great one. Up to date, however, no evidence is available to show that any of the higher animals is independent of any one of the three recognized vitamins and the probability is that in varying amount each one is an indispensable constituent of animal diet.

The age of the animal influences the demand for vitamins, there being no doubt that young animals are very much more susceptible to deprivation than are adults. There are clear indications that among adults the more vigorous and hard working are more likely to feel their loss.

As regards man, the joint committee of the Medical Research Committee and the Lister Institute, appointed to inquire into the subject, have no hesitation in classing scurvy as a deficiency disease due to lack of the water-soluble C factor and beri-beri also as a deficiency disease due mainly, if not entirely, to shortage of an anti-beri-beri factor, which is almost certainly identical with water-soluble B. Their discussion of rickets leads to the conclusion that amongst the several ætiological factors undoubtedly involved it is highly probable that deficiency of fat-soluble A takes an important place. Evidence from the continent is also quoted to show that, apart from the occurrence of rickets, a shortage of this vitamin is associated with various forms of ill-health among children, particularly inflammatory affections of the eye and greater susceptibility to other infections. Evidence of a similar nature is, moreover, steadily accumulating from European sources.

It is, therefore, practically certain that the vitamins are necessary for the health and well-being of man and the inferences to be drawn from this conclusion are of such far-reaching importance that the medical profession, as guardians of the public health, should examine them without delay and take such action as is already indicated.

In the preservation of health a proper food supply, as the chief of the environmental factors, is fundamental. In the treatment of disease a correct diet is a chief, sometimes almost the sole, consideration.

The work of the last few years has given the broad lines of the distribution of these essential factors in human food-stuffs. In general and in conjunction with previous and other recent work on the distribution of salts and the biological value of proteins it has brought clearly into view the necessity on the one hand for variety, balance and freshness in a dietary and the possible dangers of fractionated, "purified" and preserved food-stuffs on the other.

A valuable result of war-time food scarcities, especially where bodies of troops were concerned, has been to illustrate the effects upon human beings of defective diets of many different types, often in the presence of medical men acting in the capacity of medical officers of health to the persons involved, with time to make the necessary observations and inquiries and opportunity in some cases of calling in highly expert consultants. These emergencies of warfare added greatly to knowledge.

Thus the joint committee in the report above referred to are able to cite outbreaks of xerophthalmia in children and increased susceptibility to infection, due apparently to shortage of fat-soluble A and numerous instances in which both scurvy and beriberi came to light under various conditions of diet. And repeatedly throughout the report they emphasize the probability that, short of declared and obvious deficiency diseases, there must occur considerable damage to health or lowering of vitality which under ordinary circumstances never comes to light. This is well illustrated in one of the Mediterranean beri-beri outbreaks, where the recognition of several cases led to a careful examination of all the men who were exposed to the diet, with the result that slight but definite pathological changes were found in considerable numbers.

Of great significance is the "black list" of common food-stuffs which contain very little or none of the vitamins. They are nearly all, as would be expected, foods which have been fractionated or purified, dried or preserved.

First in importance come white bread and the white flour from which it is made, now the staple

[1] Read at a meeting of the Western Australian Branch of the British Medical Association on July 19, 1922.

food-stuffs of our race, fractionated so as to be deprived almost completely of the vitamins and of a large proportion of the valuable minerals of the wheat. The report makes it clear that white flour is potentially as good a disease-producing agent or as bad a food as is polished rice; several outbreaks of beri-beri following on its more or less exclusive use are quoted. In the light of this knowledge the elaborate and costly machinery of a modern flour mill suggests that medical science also might well be introduced to industry and economics.

A particularly vicious food-stuff in the list is sugar, fortunately relatively expensive in Australia. Not only is it innocent of vitamins and of any valuable property other than the capacity to supply energy, but it is peculiarly attractive to children, whom it deprives of the appetite for the natural food-stuffs necessary for their normal growth and health. It is a common observation that if infants and children are allowed the choice, they will take white bread and treacle to the exclusion of other better foods the taste for which is not so readily acquired.

Certain it is, at any rate, that the foods in the vitamin-free and vitamin-poor categories bulk largely in the diet of industrialized communities and are being increasingly consumed by the actual food-producing population which represents the backbone of the country. In times of poverty and stress the diet of the poor may consist almost entirely of white bread and foods of this class. During the examination of school children the writer has repeatedly been told, when questioning boys obviously suffering from malnutrition, that their breakfast consisted of tea and toast and the lunch which they bring to school is generally found to consist of white bread sandwiches.

It is unnecessary to try to separate or pick out the results of this increasing consumption of deficient food-stuffs from those of the many other disease-producing factors which are also in operation.

It is now reasonably certain that vitamins are necessary for the health of animals and particularly for the proper growth and development of young animals. Human beings are animals and children are young animals. Further, it is established that, in order to be adequate from this and other aspects, the diet of human beings should be ample, varied, balanced, fresh and properly cooked, whereas we know that it is frequently inadequate in these respects. Malnutrition is common even in Australia and it is especially to be found in children belonging to large families of the working classes. The very defective teeth so frequently met with and their many evil consequences are almost certainly the result of faulty dietary, possibly from an early period of ante-natal life. The "pyodermias" also common in Australia, in which the blood is so obviously "out of order," are increasingly held to be due to a faulty diet.

Dietetic or food reform presents itself, therefore, as a national public health problem of the first importance, the propaganda of which should no longer be allowed to remain chiefly in the hands of enthusiastic, sometimes almost fanatical, laymen. The medical profession can be well assured that reform is urgently needed and now that the main lines along which it should take place are clearly indicated, should address itself to the task of leading our erring race back to Nature in this respect.

The light which the new knowledge of dietetics has thrown on the causation of disease will probably clear up many of the problems and difficulties of the general practitioner. It will also greatly tend to enlist his services in the cause of preventive medicine.

## THE ABSORPTION OF ULTRA-VIOLET RAYS BY LIVING TISSUE, SPECTACLE GLASS AND SOME PHYSIOLOGICAL SOLUTIONS.[1]

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WHEN a beam of light is passed through most transparent substances, definite wave-lengths are absorbed and the spectrum shows gaps or bands where these rays are missing. This has been done with gases, with transparent solids and solutions, but limited success has followed the attempts to interpret more accurately the meaning of the bands. The estimation of the width of the absorption bands is extremely difficult and can only be done by a spectrophotometer.

Transmission of light through any substance is accompanied always by a certain amount of absorption, regardless of the colour or wave-length of the light (Wood). Pure water is one of the most transparent substances we have, but a long column of it appears blue, because it absorbs the red end of the spectrum more or less completely. Hughes states that a column of water one centimetre long cuts out all wave lengths shorter than 2,200 Ångström units, but Hilger's instrument records rays up to the limit of its scale. Thus it is evident that there is no such thing as a perfectly transparent object.

The spectroscope records accurately this absorption, of which there are two kinds: (*i.*) general, in which the absorbing power is almost the same for all wave-lengths, and (*ii.*) selective, in which the absorbed region is more or less limited in extent.

Lambert's law states that each layer of equal thickness absorbs an equal fraction of the light which traverses it. Beer's law (with regard to solutions) states that "unit layer and unit concentration absorb the same degree as a layer of thickness two with half the concentration."

### Theories of Absorption.

Practically nothing is known about the exact nature of the transformation of absorbed radiations.

Planck bases a theory on the assumed radiation of electrons, which probably takes place in all directions, but there are many objections to it, the chief being that lateral emission is found only in one or two rare instances.

[1] This article is part of a thesis for the degree of Doctor of Medicine granted to the author by the University.

Hartley investigated along the line of correlating the chemical constitution and the absorption spectra. This method is used when chemical methods fail to decide the constitution of many bodies; Baly suggests that the question of molecular structure of organic compounds may be solved in this way.

The purpose of this investigation is to show qualitatively only what ultra-violet wave-lengths are absorbed by living tissue. The transparent tissues of the eye have been chosen and the eyes of different animals examined and also spectacle glass and some physiological solutions. The quantitative estimation of this absorption is a physical problem and is beyond the scope of the investigation. A. Hilger's latest quartz spectrograph was used; it is "absolutely transparent" to ultra-violet rays. Photography is employed because the eye cannot distinguish wave-lengths shorter than 4,000 Ångström units. A glass most transparent to ultra-violet rays was made by Schott and his co-workers; this allowed rays to pass up to 2,800 Ångström units. Obviously, then, glass must be eliminated from the apparatus. The lenses and prisms in this spectrograph are made of quartz. Fluorite may be used for the lenses and a hollow quartz prism filled with water is used in some instruments. Quartz lenses alone produce foci on a curve and a templet has to be cut in the dark slide to allow of the plate being slightly bent. Hilger has been able to cut quartz prisms and lenses in such a way that the focal curve is almost flat and lies at an acute angle (27°) with the axis of the telescope.

The spectrum lines, as produced by prisms, are always curved, because rays from the centre of the slit through which the light passes on entering the instrument, pass through the principal plane of the prism; that is to say, pass in a plane perpendicular to the plane of the refracting edge of the prism. The "Collimator" lens is able to render parallel only the rays it receives from the centre of the slit; rays from other portions of the slit not traversing the principal plane are the more deviated the further they are from the centre of the slit. Hence the lines are curved when seen on a photographic plate, their ends being bent towards the violet end of the spectrum. These lines, if examined closely, show differences amongst themselves; they vary in length and in definition; some are sharp on one side and blurred on the other; some are quite sharp and others are blurred on both the red and the violet sides.

Accuracy of wave-length as determined by visual reading cannot be compared with the results obtained by photographic methods. The photographic plate method further renders much more of the ultra-violet spectrum visible and an instrument designed for photography alone is of simpler design than a spectroscope and is called a spectrograph; it contains very few moving parts.

The plate-carrier used is so arranged that a strip only of the plate is exposed at a time and by a special shutter screen it is possible to print the scale on the plate just above the spectrum photograph; it can be done before moving the plate-carrier to take the next photograph.

The ordinary photographic plate is sensitive between the regions of 5,000 Ångström units and 2,200 Ångström units; slow plates produce finer and sharper images than rapid plates. The maximum sensitiveness is in the violet or indigo; on the red side of this the sensitiveness falls away rapidly and is very small beyond 5,000 Ångström units.

The green, yellow and even red regions may be photographed on certain slow plates, but a brilliant light and long exposure are required.

In the ultra-violet the sensitiveness falls off more slowly and it extends to 2,100 Ångström units. Beyond this point the absorption due to the gelatine in the film begins to make its appearance. All kinds of dyes have been used to give better results in certain regions, but the work is not yet clear.

Abney has prepared a special emulsion sensitive to 2,000 Ångström units and has photographed the solar spectrum to 1,000 Ångström units. The prints from the plates used in this research are unsatisfactory, as it is impossible to print the very feeble lines in the ultra-violet and, at the same time, to get a good print of the red end of the spectrum. Consequently, the readings are made from the negatives only. In each case the lowest reading noted in any series of photographs through a given medium is given as the limit of the ultra-violet for that substance.

The determination of wave-length is carried out by a process of comparison between known and unknown lines of other spectra. The primary standard cadmium red line is agreed on and it corresponds to 6,438.4696 Ångström units. From this and other well-marked lines as data, the wave-length is worked out by Hartmann's formula:

$$\lambda = \lambda_0 + \frac{c}{(\mu - \mu_0)^{\frac{1}{a}}}$$

where $\lambda_0$, c, $\mu_0$ and a are constants and $\lambda$ is the wave-length.

In the present investigation, however, the readings, as referred to the scale on the instrument, are given to two places of decimals only. This method is rough according to the physicists, as the scale may be thrown out of alignment, but no instrument for measuring the lines on the plates more accurately is available in this State.

### Method of Illumination.

This is not part of the spectrograph and an electric arc (constant current) with iron rods instead of carbon rods was used. This produces a light very rich in ultra-violet rays and the spectrum of this arc is full of fine lines which range from 6,349.993 Ångström units to beyond the limit of the scale, 2,000 Ångström units.

Kayser quotes some fifty-four of them as being of a wave-length agreed upon by an international committee and another twenty-four have been charted by Fabry and Buisson. For the purpose of the experiments here, such a spectrum, with no wide gaps, made the reading of the end points easy. The mercury arc is slightly richer in ultra-violet rays, but the discomfort to the operators and the fact that it shows wide gaps caused its rejection in favour of iron. Carbon gives a large number of fine lines,

but only if used pure, and the pure carbon rods are not on the market.

The length of exposure is given in the table appended. There did not appear to be any additional lines in sharp negatives with varying exposure.

### Notation.

The unit of length is the ten-millionth of a millimetre and equals $1 \times 10^{-10}$ and is often called a tenth-metre. Frequently wave-lengths are expressed in thousands of a millimetre ($\mu$) or millionths of a millimetre ($\mu\mu$).

The Ångström unit is the unit chiefly used in spectroscopy and is the one ten-millionth of a millimetre.

### Deductions.

From the readings given in the table of experiments the following deductions may be made:

*(1) Glass Used in Spectacle Making.*

Flint glass is more efficient than crown. Crookes's No. 2, of all glasses tried, absorbs the most ultra-violet rays, *i.e.*, up to 3,525 Ångström units. Amber glass absorbs more ultra-violet rays (up to 3,268 Ångström units) than does blue glass (2,984 Ångström units) or chlorophyl (3,063 Ångström units). Thus chlorophyl is more efficient than blue glass. "London Smoke" is very little less efficient than the former two (2,989 Ångström units), while "Isometrope," a new glass claimed to be "better than Crookes's," is not as efficient as any of the glasses quoted (2,959 Ångström units).

*(2) Solutions.*

Cylindrical quartz containers, four centimetres long, were used to hold the solutions.

Distilled water has a very low power of absorbing ultra-violet rays.

Ringer's solution stops only the extreme rays (from 2,159 Ångström units) and concentrated Ringer's solution slightly more.

Saline solution (0.9%) stops rays beyond 2,182 Ångström units only. This is of interest regarding "sunburn" while bathing, it being slightly less intense if the skin is kept wet.

TABLE OF EXPERIMENTS.

| Experiment Number. | Substance Used. | Thickness. | Scale Reading of Extreme Limit of Ultra-Violet. | Exposure. | Wave-Length in Ångström Units. | Remarks. |
|---|---|---|---|---|---|---|
| 1 | Crown Glass | 1.10 mm. | 27.89 | 15 seconds | 2,789 | ——— |
| 2 | Flint Glass (unpolished) | 4.95 mm. | 32.41 | 30 seconds | 3,241 | ——— |
| 3 | Crookes's Glass, No. 1 "A" | 2.42 mm. | 35.19 | 20 seconds | 3,519 | Trade journal advertises 3,780 for 3 mm. thick |
| 4 | Crookes's Glass, No. 2 "B" | 2.68 mm. | 35.25 | 20 seconds | 3,525 | ——— |
| 5 | "Isometrope" Glass | 1.10 mm. | 29.59 | 25 seconds | 2,959 | ——— |
| 6 | Violet Glass (thin) | 2.20 mm. | 29.60 | 20 seconds | 2,960 | ——— |
| 7 | Violet Glass (thick) | 4.20 mm. | 30.91 | 20 seconds | 3,091 | ——— |
| 8 | Amber Glass (dark) | 4.25 mm. | 32.68 | 20 seconds | 3,268 | ——— |
| 9 | Chlorophyl Glass | 3.25 mm. | 30.63 | 20 seconds | 3,063 | ——— |
| 10 | Blue Glass (pale) | 1.68 mm. | 30.02 | 20 seconds | 3,002 | ——— |
| 11 | Blue Glass (dark) | 1.80 mm. | 29.84 | 20 seconds | 2,984 | ——— |
| 12 | London Smoke Glass, No. 1 | 1.80 mm. | 29.85 | 20 seconds | 2,985 | ——— |
| 13 | London Smoke Glass, No. 2 | 1.81 mm. | 29.89 | 20 seconds | 2,989 | ——— |
| 14 | Distilled Water | 4 cm. | 20.09 | 18 seconds | 2,009 | ——— |
| 15 | "Special" Distilled Water | 4 cm. | 20.09 | 18 seconds | 2,009 | ——— |
| 16 | Ringer's Solution | 4 cm. | 21.59 | 18 seconds | 2,159 | Same for 15 seconds |
| 17 | Ringer's Solution (concentrated) | 4 cm. | 21.75 | 18 seconds | 2,175 | ——— |
| 18 | Saline Solution | 4 cm. | 21.82 | 18 seconds | 2,182 | Same for 15 seconds |
| 19 | Cornea of Cat | —— | 29.72 | 18 seconds | 2,972 | ——— |
| 20 | Cornea of Dog | —— | 30.46 | 20-30 seconds | 3,046 | ——— |
| 21 | Cornea of Sheep | —— | 30.11 | 25 seconds | 3,011 | ——— |
| 22 | Cornea of Bullock | —— | 30.19 | 25 seconds | 3,019 | ——— |
| 23 | Cornea of Rabbit (white) | —— | 29.38 | 20 seconds | 2,938 | ——— |
| 24 | Conjunctiva of Bullock | —— | 23.86 | 35 seconds | 2,386 | Not satisfactory |
| 25 | Lens of Dog | 1 cm. | 30.75 | 15-20 seconds | 3,075 | Lens crushed |
| 26 | Lens of Sheep | 1 cm. | 31.38 | 15-20 seconds | 3,138 | Lens crushed |
| 27 | Lens of Bullock | 1 cm. | 31.65 | 8-10 seconds | 3,165 | Lens crushed |
| 28 | Lens of Rabbit (white) | 1 cm. | 30.49 | 14 seconds | 3,049 | ——— |
| 29 | Aqueous of Bullock | 1 cm. | 30.12 | 20 seconds | 3,012 | Doubtful value |
| 30 | Vitreous of Bullock | 4 cm. | 30.42 | 18-20 seconds | 3,042 | Plate 18 |
| 31 | Vitreous of Sheep | 4 cm. | 29.22 | 17-20 seconds | 2,922 | ——— |
| 32 | Vitreous of Rabbit | 1 cm. | 28.31 | 20-25 seconds | 2,831 | ——— |
| 33 | Vitreous of Dog | 1 cm. | 23.28 to 25.50 and 27.38 | 15-20 seconds | 2,328 | An extra group of lines is indicated |
| 34 | Finger Nail (human) | 0.75 mm. | 32.65 | 50 seconds | 3,265 | ——— |

*(3) Living Tissue.*

The thickness of tissue is given in the table appended.

(*a*) Conjunctiva. This is not satisfactory, as the subconjunctival tissue cannot be dissected cleanly.

(*b*) Corneal experiments show that in all animals tested this membrane is, of all the transparent media of the eye except the lens, the best filter of ultra-violet rays. The readings are slightly higher than that given by Hill, who states that the "cornea absorbs all rays shorter than 295 $\mu\mu$." The cornea of the cat and rabbit show a greater permeability than that of the dog, sheep or bullock.

(*c*) Aqueous humour could not be obtained in sufficient quantity and free from uveal pigment in any animal except the bullock and even in this case the experiment was not satisfactory.

(*d*) Lens. The lens absorbs more than the cornea in all instances, but in the dog there is very little difference indeed.

(*e*) Vitreous. The vitreous in all instances absorbs less than either the lens or the cornea.[1]

(*f*) Human finger nail cuts off all rays beyond 3,265 Ångström units and this is enough to prevent sunburn of the nail-bed.

Recent specimens in human eyes were not available for these experiments.

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## TRACHOMA.

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IT is with a certain amount of diffidence that the somewhat unorthodox views expressed in this short paper on trachoma are put before you. Two aspects will be considered: (*i.*) the subepithelial site of the disease and (*ii.*) its pathology. An attempt will be made to question some of the methods of treatment at present in vogue and to plead for less energetic measures.

Although the specific organism has not yet been discovered, trachoma is now recognized as a chronic infective disease affecting the subepithelial adenoid tissue of the conjunctiva. It usually begins in the lower fornix; it may spread to the upper, the tarsal plate and in some cases to the limbus and cornea.

[1] The vitreous of the dog shows a remarkable and, as far as these experiments go, a unique series of faint iron lines in the ultra-violet far beyond the point where the definite lines end at 2,738. This faint series is further out and extends from 2,550 to 2,328. No explanation of this phenomenon is apparent. Obviously the dog's vitreous is permeable for ultra-violet light between the limits mentioned, but such wave-length would in the animal be absorbed by the lens or the cornea.

Its pathology is very similar to another chronic infective disease, *viz.*, tuberculosis. In each the focus of infection, acting as a mild irritant, sets up a chronic inflammation and calls mainly on the local defensive mechanism of the tissue cells.

### The Defensive Mechanism.

The local cells involved in the process are: (*a*) endothelial cells from the lymph spaces, small blood vessels and lymphatics, (*b*) lymphocytes which are formed by proliferation of the local lymphoid tissue. These cells in trachoma infiltrate the subepithelial conjunctival tissues and in places are aggregated into clusters forming the follicles characteristic of the disease. Later on the central cells of the follicles may be absorbed or degenerate; fibrous tissue, which gradually contracts, forms in the periphery of the follicle, whilst the central cells or their degenerated remains are either absorbed or extruded on the conjunctival surface until ultimately the follicle disappears and is replaced by scar tissue, so that, as in tuberculosis, there is always a certain amount of destruction of tissue, the amount being proportionate to the extent of degeneration of the central cells. Unlike tuberculosis, the central cells do not undergo caseous degeneration and giant cells are not formed. The neighbouring lymphatic glands are not affected and no rise of temperature has been recorded. In each case Nature builds slowly a barrier around the organisms. No doubt many organisms are destroyed by the local phagocytes without the necessity for barriers, their formation depending on the virulence of the organisms or lessened resistance of the tissue or both.

In both diseases, by the time a case is recognized clinically the organism has got many months' start, the clinical manifestations being the reaction of the tissues against the invasion.

There are some other points of resemblance between tuberculosis and trachoma. Both are in the great majority of cases chronic diseases; acute trachoma is described, but the view generally accepted is that it is a superimposed pyogenic infection on the chronic disease, just as in tuberculosis the presence of pyogenic organisms may increase its virulence. It is clinically recognized that trachoma is more contagious when pyogenic infection is present.

Both are more frequent in those who live under bad dietetic and hygienic conditions. Probably a lowering of the general health is as essential for the establishment of trachoma as it is for tuberculosis. Both are only slightly contagious and occur more often in childhood than in later periods of life.

Again, many cases of both diseases run their course without the patient being aware of their presence. It is not uncommon to see evidence of healed trachoma in the shape of scars on the conjunctival surface of the tarsal plate and yet the patient has had very little inconvenience with the eyes.

Probably in these cases the central cells of the follicles have not degenerated or, if they have, have been absorbed without the follicle bursting into the conjunctival sac.

In uncomplicated cases Nature does not use the

polymorpho-nuclear leucocytes formed in distant parts, but any acute irritant, whether mechanical, as expression, scarification, chemical, as caustics, or organic, as pyogenic infection, will at once call up the whole defensive mechanism of the body and will result in an acute inflammation. There will be definite leucocytosis, possibly suppuration and necessarily greater involvement of the surrounding comparatively healthy tissue and as a result the formation of a large amount of scar tissue.

The conjunctival epithelium proliferates and thickens; there is increased secretion of mucus and this in pure cases is the only discharge. Muco-purulent discharge is evidence of a superimposed pyogenic infection. In old severe cases, especially those in which there has been a large amount of scar tissue formed, the epithelium atrophies, the cells undergo keratinization, the mucus-producing goblet cells of the conjunctiva are destroyed and that incurable condition, *xerosis*, ensues. The epithelium is the first line of defence, so it is important to preserve it intact in as healthy a condition as possible and not to apply anything which interferes with its nutrition, thus lessening the liability to pyogenic infection and extrusion of the contents of the follicles.

The tarsal plate may be affected later, the disease spreading from the fornices. Follicles form and the plate becomes infiltrated with inflammatory products and softened, consequently it is easily distorted. Apart from *pannus* and *xerosis*, all the conditions which so materially interfere with vision, are due to distortion of this plate.

Probably in the future trachoma may be found to be a much more prevalent disease than we at present imagine and in a great many cases it may be found that the disease never gets beyond the fornices. If it is so limited, no complications or sequelæ are likely to occur, as in the great majority of cases these are secondary to the disease attacking the tarsal region.

### Pathological Basis of Treatment.

In treatment the following points seem to be important:

(1) To rest the part as much as possible. We know the importance of resting any tissue infected with tuberculosis. By rest we aim at lessening the extent of degeneration in the central cells, consequently a smaller amount of tissue is destroyed and less scar tissue is formed when cure results.

(2) The disease affects the subepithelial tissues. It is therefore important to preserve the epithelium intact. The nutrition of the epithelium is already disturbed by the inflammation and when the portion over a follicle is destroyed, either by the follicle bursting naturally or as the result of irritants or trauma, it is impossible to prevent the opened follicle becoming septic. We know that when a pyogenic infection is mixed with a tuberculous one, the latter becomes more virulent. It is suggested that the same occurs in trachoma. If this is so, it seems important to maintain the epithelium intact.

(3) It is chronic. Where follicles have formed, there will certainly be destruction of the tissue attacked, which is replaced by scar tissue.

(4) The surgeon is working in a limited field, where every extra millimetre of scar tissue means more distortion of the tarsal plate, with increased risk of complications and sequelæ.

That the treatment of this disease is at present decidedly unsatisfactory we can easily convince ourselves by a visit to a few hospital clinics, where we see patients, some after years of treatment, with considerably impaired vision, the result in many instances of preventible sequelæ. Most surgeons, even if the diagnosis is made in the early stages, immediately apply treatment with the object of destroying the follicles. We may ask ourselves: "Is this treatment based on a proper conception of the pathology and site of the disease?" We believe it to be an infective disease; if so, then the follicles, by enclosing the organisms, are the reaction of Nature against them.

The usual form of treatment consists in washing out with a lotion and trying to destroy the follicles by chemical (copper sulphate, silver nitrate or strong perchloride) or mechanical means (scarification, expression, rubbing with sandpaper, etc.). The effect produced by caustics depends on their strength and the length of time they are in contact with the tissues. When strong ones, such as copper sulphate, strong solutions of mercury or silver nitrate, are employed, some of the epithelial cells will be killed and cast off as a slough. This means a certain amount of acute inflammation in which the polymorpho-nuclear variety of leucocyte predominates, yet Nature does not use this variety in attacking the organism. It has been suggested that the beneficial effect of caustics is due to phagocytic action of the polymorpho-nuclear variety, but the acute inflammation set up by each application causes a greater and more rapid formation of scar tissue than would occur in the absence of irritants, with resultant greater contraction of the conjunctiva and deformity of the tarsus.

The intermittent application of irritants causes proliferation of those epithelial cells which are not destroyed. The ultimate result of this, aided by the excessive formation of scar tissue, is interference with their nutrition and atrophy.

The goblet cells do not then secrete mucus which helps to lubricate the conjunctiva; resistance to infection is lessened; the conjunctival epithelial cells, deprived of their secretion, undergo keratinization and in extreme cases *xerosis* is produced.

However carefully the application of the caustic may be carried out, it is almost impossible to prevent some of it getting on to the cornea and interfering with the nutrition of its epithelium; it thus acts as a predisposing cause to infection of that structure.

Another bad effect of caustics is associated with the intense blepharospasm their application causes. This lasts a considerable time and is continued in a modified degree as the result of subsequent inflammation. All this means excessive action and consequent hypertrophy of the *orbicularis* muscle.

If we watch normal lids when squeezed tightly, we notice the skin of the lids thrown into a series of folds in such a manner as almost to obscure the bases of the eye-lashes. Probably they would invert were it not for the tarsus, which also, by its resili-

ency, is a factor in causing the lid to resume its position of rest on relaxation of the *orbicularis*. The *orbicularis* may be compared to a sphincter muscle; when it contracts, it diminishes the interpalpebral aperture, both vertically and horizontally. Even the narrow strip of the plate left after partial tarsectomy seems sufficient to prevent inversion of the lashes.

Now in trachoma the tarsus is swollen and soft, its resiliency destroyed by inflammation; consequently it will not stand the stress of severe muscular contraction. It is suggested that excessive action of the *orbicularis* on a tarsus in this state aids materially the contraction of the scar tissue in producing deformity. The normal well-defined posterior-inferior border of the tarsus becomes rounded and the eye-lashes, being inserted into the eye-lid anterior to the tarsal plate, slip round it, as it were, producing entropion and trichiasis.

In the majority of advanced cases of trachoma there is noticed a narrowing of the transverse and vertical diameters of the interpalpebral aperture and a certain amount of drooping of the upper lid. The hypertrophied *orbicularis* is probably a factor in producing these conditions, aided possibly to a certain extent by atrophy of the opposing elevator muscles, the drooping of the upper lid being not due entirely to thickening the result of the disease.

### The Significance of the Follicles.

When mechanical means are used to destroy the follicles, the conjunctival epithelium is destroyed. The follicles are opened; Nature's barrier is removed; the enclosed organisms are set free in the conjunctival sac; pyogenic infection is inevitable. An ulcer is formed. There always follows severe acute inflammation, with the formation of a large amount of scar tissue, so that the risk of distortion of the tarsal plate is increased and the cornea, instead of being in apposition to mucous membrane, has rough scar tissue rubbing against it, acting as a continual irritant to its epithelium.

Apart from *pannus* and *xerosis* the dangers to vision are due to the sequelæ coincident with distortion of the tarsal plate, *viz.*, entropion and trichiasis. Obviously, if we are to prevent them, the aim of treatment must be:

(1) To prevent overaction, with consequent hypertrophy of the *orbicularis*.

(2) To prevent the formation of an excessive amount of scar tissue and try to preserve the conjunctival epithelium over the follicles on the tarsal plate, so that when recovery occurs, smooth epithelium and not hard, rough scar tissue will be in contact with the cornea.

*Pannus* is due to the disease attacking the cornea superficial to Bowman's membrane. In the great majority of cases it comes on after the tarsal region is affected. Spreading from the limbus, it may extend all over the cornea, but it is generally limited to that part which is covered by the upper lid when the eye is open. It is suggested above that caustics, etc., predispose to this complication by lowering the nutrition of corneal epithelium and that the roughened lid is a factor. In support of this view is the fact that after removal of part of the tarsal plate, *pannus* generally clears up quickly. It will also generally clear up with the tarsus present, if both eyes are bandaged for about two weeks, the bandage being taken off only three times daily for irrigation of the conjunctiva. The writer adopts bandaging and irrigation if *pannus* does not clear up after partial tarsectomy. Pyogenic infection contraindicates bandaging and it should only be resorted to when the patient can be kept under strict observation.

In the cases where it was tried without partial tarsectomy the *pannus* cleared up, but recurred as soon as the bandages were left off.

In this complication, the cornea being avascular, loops of blood vessels are sent across it from the conjunctival vessels at the limbus to combat the disease. Again treatment is questioned; peritomy is done. The aim of this operation is to cut off the blood flow in the vessels Nature has expressly sent out to combat the disease. The vessels will quickly shrink once the cause for their being there is removed, and with their shrinking, the cornea generally returns to normal, except when Bowman's membrane is implicated, permanent scars will remain.

If any operative interference is deemed necessary on the conjunctiva in the region of the limbus for the treatment of *pannus*, after removal of part of the tarsal plate probably the wisest procedure would be to separate the conjunctiva right round at the limbus and to draw it forwards by a purse-string suture, so as to cover the cornea completely. When the suture is removed, the conjunctiva gradually retracts.

Usually it seems the wiser plan to interfere with the bulbar conjunctiva as little as possible.

If a patient with trachoma is seen early, the treatment suggested is local cleanliness of the conjunctival sac by irrigations with saline or mild antiseptic solution used freely at least three times daily, followed by weak antiseptic drops, such as resorcin and zinc sulphate, the wearing of protective glasses in sunny weather, correction of any refractive error, avoidance of near work. Irrigation of the lachrymal sacs with a weak solution of zinc sulphate two or three times a week is a great help. Any abnormal nasal condition or source of septic infection, such as bad teeth, septic tonsils, etc., should be attended to. The hygienic and dietetic treatment suitable for tuberculous patients are also suitable for trachomatous patients; an atmosphere free from flies, dust and smoke is esential.

### Preserving Nature's Barriers.

In both diseases the object is to try to cause scarring with the least possible destruction of the affected tissue. This is best attained by not irritating or destroying Nature's barriers, but by dietetic and hygienic measures to improve the general tone of the patient; Nature will gradually overcome the disease.

The treatment of tuberculosis in properly regulated institutions has been attended with success. We may hope for similar results in trachoma.

If the disease is far advanced on to the tarsus and the surgeon sees that entropion and trichiasis will probably result or, in earlier cases, providing the tarsus is affected and the patient cannot continue treatment for some time under suitable con-

ditions, partial tarsectomy is indicated, part of the diseased tarsus is removed *en masse*, leaving only about two millimetres of its lower part. The conjunctiva of the fornix is then sutured to the upper edge of the remains of the tarsus. The presence of *pannus* does not contraindicate it, but rather the reverse. The majority of cases clear up very quickly; entropion and trichiasis are generally prevented.

By partial tarsectomy all the diseased conjunctival tissue is not removed, but only that part which, when complicated and distorted, causes most serious sequelæ and may predispose to most serious complications.

If there is much blepharospasm and narrowness of the interpalpebral aperture, a canthotomy is indicated first.

In further advanced cases with entropion and trichiasis canthotomy is generally indicated first. After that attention should be paid to the trichiasis. The operation the writer has found most useful in these cases is splitting the lid freely along the white line, carrying the incision obliquely up and in and up and out for about three millimetres on to the eye-lid at the inner and outer terminations of the eye-lashes. This allows the skin and eye-lashes to slide upwards. Then a strip of mucous membrane from the lip or skin from the upper lid is transplanted into the wound. After this has healed a partial tarsectomy may be done.

In very severe cases, where there is marked contraction of the conjunctival sac and posterior symblepharon, any or all of the above procedures may be indicated, but owing to the contracted state of the conjunctiva, it cannot be brought down to the cut edge of the tarsus after partial tarsectomy. In these cases mucous membrane from the lip may be transplanted with success.

## Reports of Cases.

### LIGHT MASSAGE IN TREATING FRACTURES.

BY E. A. ELLIOTT, M.B., CH.M. (SYD.),
*New Town, Hobart.*

J.P., a boy, aged nine years, was brought to me on February 20, 1922, suffering from an injury to his left elbow. He had fallen from a ladder at the school gymnasium on to his elbow earlier in the day.

Examination showed the presence of a moderate amount of swelling round the elbow joint. The movements of flexion and extension of the elbow joint were greatly restricted. Pronation and supination of the forearm, though painful, were almost normal. A skiagram taken by Dr. Stansfield showed a separation of the lower epiphysis of the humerus.

The deformity was corrected and the arm was kept at rest for four days. It was then decided to adopt the treatment recommended by Hey Groves in dealing with fractures. This consists in massage of the affected limb by the surgeon with a light superficial stroking or "caressing" movement. Hey Groves states that after a few minutes, relaxation from the spasm caused by the injury ensues and that passive movement can be undertaken without pain.

In this case the treatment was effective and improvement rapidly occurred. On March 7 the patient was able to touch his lips, on March 21 he could place his fingers on the middle of the clavicle on the affected side and extend the arm fully. Treatment was regarded as complete on March 26, when the patient was able to touch the acromio-clavicular articulation on the affected side.

Passive movement was used up to the third week and the patient experienced no pain throughout.

## Reviews.

### SCIENTIFIC DIETETICS.

"VITAMINS AND THE CHOICE OF FOOD"[1] is designed for the "general reader." The "general reader" will be interested and many will read it, for the subject has touched the popular imagination and many "general readers" are keen for information. Medical men will do well to devote really serious attention to what McCollum has called the "newer knowledge of nutrition." Not that it is all so very new. Some of the work, fundamentally important, is over thirty years old. It has been known and made use of by a few, but how many have been blind and deaf—and satisfied? But if medical men as a body do not very soon resolve to heave traditions overboard and to get a thoroughly effective hold of this knowledge, they will have to meet the competition of so-called "unqualified" practitioners who may know more than themselves and who will at last cure the patients to whom they have for years been dealing out the conventional orthodox patter, telling them not to drink at meals, to eat white meat, to avoid very carefully one after the other the various things that might have prevented them from getting worse, but to buy Nostrum & Company's well-advertised proprietary, a sample of which was left with them last week by a philanthropic commercial traveller.

As a beginning the careful reading of this little book can be recommended. It is clearly expressed, interesting in style and it is sound. It is well that a popular exposition of the subject should have been undertaken by such competent teachers. Dr. R. H. A. Plimmer, one of its authors, is a well-known bio-chemist, himself engaged in research work on some of the subjects discussed.

The book is wisely planned. Though the reader is enticed to take notice by the term "vitamins" in the title, he is made to see very soon that it is impossible to get a rational idea of diet and dietary needs by beginning with vitamins. Therefore, in the introduction the reader is taught something about metabolism. He is taught the necessity of thinking quantitatively. He learns what is meant by calories and how this conception and this method lends clearness to thought and facility to resource. After energy values comes the consideration of salts, water and other substances. We think the book would be improved by a little more emphasis on the important part played by the mineral constituents or inorganic salts, especially calcium, phosphorus and chlorine.

Then comes the consideration of the three vitamins or three groups of vitamins, as some think they may be, with discussion of their relationship to beri-beri, to scurvy, to rickets, to growth changes and so on. The authors wisely include with the discussion of the vitamins the subject of protein "building stones," especially the amino-acids, lysine, tryptophane and cystine. With this is introduced the idea of protein as a vehicle of amino-acid supply rather than as a substance of uniform composition, all kinds of which are of the same value. It is shown how a protein may be restricted in value by the "law of the minimum" in respect to one or more essential amino acids. This is brought out by a discussion of pellagra amongst other things.

We have noticed one statement which, so far as we know, is not supportable by evidence, namely, that the outer layers of grain contain A vitamin (page 122) and that brown bread contains A vitamin (page 122 and page 126). The existing evidence is practically unanimous in the contrary direction.

Many of our readers will dislike extremely the frequently recurring puff of a certain proprietary article. There is no need whatever to buy expensive proprietary articles in order to get B vitamin in plenty and the authors, who, of course, know this, ought to say so in unambiguous terms.

[1] "Vitamins and the Choice of Food," by Violet G. Plimmer, Associate of the Royal Sanitary Institute, and R. H. A. Plimmer, D.Sc., Professor of Chemistry in the University of London, etc.; 1922. London: Longmans, Green & Company; Demy 8vo., pp. 164, with illustrations and charts. Price: 7s. 6d. net.

The Medical Journal of Australia

SATURDAY, SEPTEMBER 2, 1922.

## Infants' Foods.

ON September 6, 7 and 8, 1922, a conference will be held in Sydney on the question of introducing uniform regulations in regard to the *Pure Food Acts*. We are informed that the subject of infants' foods will be included in the discussions. In the year 1915 a regulation was introduced under the provisions of the *Health Act* of Victoria defining an infants' food as a food described or sold as an article of diet suitable for infants. According to the regulation, all foods not conforming approximately in proportional composition to human milk or containing more than 1% of starch must be plainly labelled that it is not to be given to infants under six months of age except under medical direction. In 1916 a similar regulation was promulgated under the Federal *Commerce (Trade Descriptions) Act, 1905*. This restriction has been introduced in the regulations under the *Pure Food Acts* of the other States. The Commonwealth, New South Wales, Queensland and Western Australian health authorities have adopted an arbitrary standard composition of human milk at 1.5% of protein, 3.5% of fats and 6.5% of sugar, but permit a 20% variation of each constituent. The Victorian authority also accepts this arbitrary standard of composition, but is not prepared to recognize any fixed variations in the percentage of sugars. The several health authorities, no doubt, desire to protect the infants of Australia against harm that may result from the ingestion of food that is unsuitable or deleterious. It is, however, obvious that the advisers of these health authorities are not expert physiologists and that they have no experience in the artificial feeding of infants. It might be thought that Nature would be the best guide and that it would be safe to set a standard based on a mean of the percentage proportions of the constituents. Unfortunately, the advisers to the health authorities failed to recognize two very important physiological facts. They have further ignored much extremely valuable experience.

The first point to be considered is the composition of mother's milk Several physiologists have studied the composition of human milk and all have noted a very wide variation of all the constituents except, perhaps, the proteins. We are in the fortunate position of having figures for the milk of Australian women. In 1915 Dr. Halcro Wardlaw and Professor H. G. Chapman published in the *Journal of the Royal Society of New South Wales* the results of analyses of the milk of a considerable number of mothers. It appears that the fat content varied between 0.56% and 7.6%. The average was found to be 3.14%, which is lower than the figure on which the standards of the laws are based. It must be remembered that the women concerned were apparently normal women and that their babies were being well nourished. During the first eleven days of lactation the fat content rose from 2.8% to 4.1%. It would thus appear that Nature recognizes that infants require a food which varies within very wide limits, according to age, individuality and the stage of the evolution of the metabolism mechanism. Nature provides a variation in regard to fats of 80% below the mean and even 150% above the mean. The wiseacres of the Commonwealth and State Governments reprove Nature for her careless ways; not more than 20% variation may be permitted! The fact that the milk of 80% of the mothers in Australia is, according to the Federal and State standard, not a suitable food or infants and should not be given to infants under six months of age except under medical direction, must reveal a national defect! A regulation should be introduced to enable the authorities to deal with these delinquent mothers. Dr. Wardlaw's figures show that the mean percentage of lactose is 7.1%, that is, 10% higher than the arbitrary figure of the standards. Moreover, a considerable variation was discovered in connexion with the sugar content. We are therefore forced to the conclusion that, if the health authorities are justified in adopting a standard at all, physiological data demand the withdrawal of the prohibition to sell foods as infants' foods unless they conform "approximately in proportional composition to human milk."

The second physiological fact which has escaped the attention of the authorities, is that the fœtus in the sixth month of development acquires the power of digesting starch. At first the amount of ptyalin in the saliva is small, but after birth the infant responds readily to the ingestion of carbohydrates. Many pædiatricians find that malted foods under certain circumstances are admirably suited to the infant; the advisers of the health authorities might find it advantageous to ascertain how some of the infants at the chief children's hospitals in the Commonwealth are nourished. Physiological study, further, has revealed that the appearance of lipase is a relatively early phenomenon in the maturing fœtus. At birth the power to hydrolize neutral fats into fatty acids and glycerine and to metabolize the split products is considerable, but this power is often unstable. Under pathological conditions this power is the first to suffer. Australian physicians know only too well why Nature reduces the fat content of mother's milk in hot weather. They imitate Nature when dealing with artificially fed infants whose metabolic powers have become impaired. In regard to the sugars, careful experiment has taught that when the metabolic balance is disturbed and the infant is no longer capable of dealing with the usual amount of fat, its needs measured in calories can be covered by the substitution of extra lactose.

The experience of competent observers must not be ignored. Infants fed on foods which have to carry the ridiculous label in Australia, have thrived and grown into strong and useful men and women. In other countries mothers who believe that they cannot nurse their babies, try one after another of the well-known infants' foods until they find a suitable diet for their little ones. Many of these foods are not imported into Australia and are not manufactured here because of the absurd restriction. The manufacturers refuse to add words which convey a false significance.

There is no need for this regulation concerning infants' foods. There would be no objection to the insistence on the publication on the label of the percentage composition of the foods. But the health authority should not attempt to dictate to the public the constituents of a suitable food for infants. The scales, clinical experience and the history of countless individuals give the lie direct to the authorities who claim that the food is unsuitable unless it conforms to an arbitrary standard.

## THE REPATRIATION DEPARTMENT.

SOME time ago the Federal Committee of the British Medical Association in Australia found it necessary to make representations to the Department of Repatriation concerning the scale of fees proposed to be paid to medical practitioners for services rendered on behalf of the Department to returned soldiers suffering from war disabilities. The fees offered were set out in a document known as "Circular L." The medical profession has at all times shown itself ready and willing to give assistance to returned men in need of it. It was felt, however, that the community as a whole was under an obligation to provide treatment to the brave boys who had fought and suffered. The services should not be a burden on a small section of the community, but should be a charge on the whole population. The Minister was therefore urged to amend the scale of fees. After much delay and considerable correspondence a new scale was drawn up and submitted to the Federal Committee. This scale was considered at the last meeting of the Federal Committee and was accepted. It has been published in our columns. The services are no longer very onerous and are apparently becoming less each year.

Not long ago a request was addressed by this journal to the Department of Repatriation for information concerning the medical services of the Department. It was thought to be desirable to publish the details concerning the number of whole-time and part-time medical practitioners acting on behalf of the Department, the various rates of remuneration paid and the nature of the services. A peremptory refusal to supply the information sought for publication was received. This refusal was extraordinary for many reasons. Full details were provided by the other governmental departments in regard to their respective medical services and in the majority of instances the professional head of the department was authorized to contribute an article to THE MEDICAL JOURNAL OF AUSTRALIA de-

scriptive of his service. As the information was sought for the purpose of disclosing to the medical profession the advantages of joining these medical services and the prospects for those who elected to enter them, the refusal was unfortunate. The Department of Repatriation is entrusted with a series of duties by the public and the public provides the money for the performance of these tasks. It would therefore seem that the policy of the Department and the manner in which it gives effect to that policy are matters of public interest and should not be withheld from those concerned.

The Department of Repatriation has now control of the hospitals instituted during the war for the treatment of soldiers. The administration of some of these hospitals under the Department of Defence has been the subject of criticism in the past. Whether this criticism was or was not justified, a great deal of magnificent medical and surgical work has been performed in them. The medical profession continues to render admirable service to incapacitated ex-soldiers. Full information should be available concerning the work and concerning the conditions under which this work is performed. We trust that in the near future the Department will relinquish its foolish and mistaken policy of keeping the medical profession and the community in ignorance concerning these important activities.

We have received an interim report of the Department of Repatriation on the scheme for the provision of education to the children of deceased or totally and permanently incapacitated soldiers. On paper this scheme appears to be well planned and suitably administered. It is, of course, too early to judge the measure of efficiency displayed in carrying out the details of the scheme. It was inaugurated in February, 1921, and in the course of the first seventeen months over two thousand children have been given some form of training. The children eligible are over thirteen years of age. Of these, 1,453 have received instruction at schools. Three hundred and twenty-three have been placed as pupils or apprentices in various industrial callings, twenty-seven have been given an opportunity to study agriculture, while thirty-three have been enabled to become professional students. We are not informed how many have chosen medicine. The total number of applications up to June 30, 1922, has been 2,805. Of these, three hundred and thirty-eight have been refused and one hundred and ninety-seven have been withdrawn. No information is given concerning the reasons for the refusal or the withdrawal of the applications. The Commission recognizes the value of publicity in connexion with this scheme, more particularly because the success of the undertaking as far as industrial training is concerned is to a great extent dependent on offers of employment of the children as pupils or apprentices. It is further of importance that the public shall be in sympathy with the undertaking, as the Commission invites the assistance of private individuals to aid them in meeting the large expenditure involved. The Commission or the Department will obtain the financial and other assistance of the public only if it reveals economy in administration and technical efficiency. Hitherto the Department has not been frank in its dealings with the medical profession.

## ACUTE PRIMARY PHLEGMONOUS ENTERITIS.

IN 1876 Belfrage and Hedenius described a phlegmonous condition of the jejunum discovered by them while operating on a patient, who was suffering from a strangulated omental hernia. A generalized peritonitis was present and part of the jejunum was found to be thickened. It was acutely inflamed, brawny and indurated. On *post mortem* examination the lumen of the bowel was found not to be obscured, but its mucosa was greyish-yellow in colour, its folds were greatly accentuated and occasional patches of ulceration were seen. The submucous layer was thickened, its loose tissue was infiltrated with pus and the infiltration and thickening extended into the muscular layer. Hedenius looked on the condition as of an infective nature and thought that it was similar to phlegmons of the subcutaneous tissue. Its occurrence is rare.

In 1906 MacCallum collected the records of seven cases and reported one himself. Of these four involved the duodenum, two the jejunum, one the transverse colon, while in one case the whole of the intestinal tract was affected. MacCallum stated that acute primary phegmonous enteritis was analogous to the relatively more common and better known phlegmonous gastritis. Schnarrwyler collected records of eighty-three cases of phlegmonous gastritis. He found that the mortality in these was 98%. Adams, however, went so far as to say that no authentic case of recovery had been recorded. Schnarrwyler found that gross primary lesions of the stomach were present in twelve cases of forty to which he was able to assign a cause.

MacCallum endeavoured to determine the ætiology of acute primary phlegmonous enteritis. In the case reported by him, the patient had suffered an injury (having been struck by a street car) three weeks before the onset of symptoms and Askanazy reported an instance of the disease in a patient who had sustained an injury to the knee. A history of trauma, however, is not always obtainable. In a case reported by Mathes in 1905 the patient suffered from cirrhosis of the liver with ascites and a severe attack of erysipelas developed three days' before death. *Post mortem* examination showed that streptococci were present in great numbers at the site of the lesion. It was thought that infection in this case had been due either to injury caused to the duodenum at its most bound-down point by stretching as a result of the extreme ascites or to injury caused by a trochar in tapping the abdominal cavity or else by extension from the site of erysipelas. MacCallum declared himself in favour of Askanazy's hypothesis that injury to the abdomen might affect the duodenum or jejunum on account of their more or less attached character and that infection might take place from the blood stream in a *locus minoris resistentiæ* thus formed. He pointed out that in the case reported by him, as the mucous membrane was intact, this explanation seemed to be correct.

Dr. J. B. Ferguson Wilson has recently reported an interesting case of this disease.[1] The patient was a man, aged thirty-eight years, a butcher. He was taken ill two days before admission to hospital with sudden abdominal pain and vomiting. He was acutely ill and a diagnosis of either acute hæmorrhagic pancreatitis or perforated gastric ulcer was made. Laparotomy was undertaken. A large portion of the jejunum was found to be affected. The patient's condition was so desperate that a resection could not be attempted and a lateral anastomosis was performed between the jejunum above and below the affected area. Recovery was slow, but complete.

Total removal of the affected segment of bowel would seem to be the operation of choice. Dowd reported an instance in which he successfully resected part of the descending colon. If complete removal is impossible on account of the situation and relations of the lesion, a short circuiting operation should be undertaken. In any case prompt treatment is necessary and, although the disease is rare, the possibility of its presence must be borne in mind in the face of an acute abdominal crisis.

[1] *The Lancet*, June 24, 1922.

## HISTOLOGICAL CHANGES IN THE CIRRHOTIC LIVER.

THE macroscopical appearances presented by the liver from a patient dead from cirrhosis of that organ are well-known and characteristic. The diminution in size and the irregular, "hob-nailed" appearance are typical of the condition. On section the organ is found to be tough and the cut surface is seen to be divided into irregular areas of liver tissue separated from one another by slighlty gelatinous-looking strands of fibrous tissue. The microscopical appearances are not less typical. These changes have been ascribed to one of two distinctly different processes. According to the older view the disease process was supposed to originate in the connective tissue stroma. It was held that œdema and hyperæmia of the connective tissue occurred and that there was a proliferation of its cellular elements. This resulted in an insinuation of the cellular elements between the liver cells. It was presumed that, as the disease advanced, the connective tissue contracted and caused destruction of the liver cells by literally squeezing them to death.

Dr. Frederick Epplen, in a recent historical and pathological study of cirrhosis of the liver,[1] points out that those who took this view of the pathogenesis of cirrhosis, presumed a special vulnerability of the connective tissue of the liver as compared with that of other parenchymatous organs. The other view of the origin of cirrhosis is that the primary degenerative changes occur in the parenchyma of the organ. The cells degenerate and die and are replaced by connective tissue. It has been shown that, while this destruction is going on, there is a concurrent effort at regeneration on the part of the liver. Ponfick was the first observer to show experimentally the regenerative power of the liver. He excised as much as four-fifths of the liver of dogs and found that regeneration occurred with a return to practically its normal size. The parenchymatous origin of cirrhosis is generally accepted, but, while the authors of text-books lay great stress on the degenerative changes that occur in liver cells and thus label cirrhosis as a steadily progressive process of destruction, they make little reference to the regeneration that takes place.

The regenerative changes in cirrhosis were first accurately described by Kertz in 1900. He described the condition seen at autopsy as the end product of a series of alternating destructive and regenerative changes. The masses of tissue in a cirrhotic liver could not be regarded as being composed of acini such as are present in normal livers. He showed that the typical structural relationship to the blood vessels had been altered. The central vein no longer occupied a central position. It was placed in the periphery of the tissue masses and was often found embedded in the meshes of the connective tissue surrounding the masses. He carried out injection experiments and found that when the portal vein was injected, the injection appeared in the hepatic vein, passing thither by way of the fibrous tissue and leaving areas of liver cells unaffected. When the injection was made into the hepatic artery, it was in the areas unaffected by the portal vein injection that the coloration first appeared. Dr. Epplen states that only one conclusion can be drawn from these results, namely, that the regenerative process in the liver takes place under the direct nutritional influence of the hepatic artery. The anastomoses in the hepatic circulation are more free and extensive in the presence of the regenerated tissue and it is possible that with the opening of new channels a certain amount of backward pressure on the portal vein may result. Dr. Epplen in this state of affairs sees an explanation of the ascites so frequently found as an accompaniment of cirrhosis.

[1] *Archives of Internal Medicine*, April 15, 1922.

MacCallum investigated the subject of cirrhosis in 1904 in a very thorough and extensive manner. He made observations on 2,300 *post mortem* examinations of cirrhotic livers and confirmed the conclusions previously arrived at by Kertz. In addition to this, he found that if a patient were able to survive an acute destruction of liver tissue, such as that occurring in acute yellow atrophy, not only was the débris of necrotic tissue removed and scar tissue formed in its place, but the small remnants of tissue remaining gave evidence of recuperative and reproductive power in an endeavour to replace that which had been destroyed. Marchand held that this repair took place in several ways. It occurred by proliferation of the larger, intact remains of the parenchyma or by the proliferation of isolated liver cell clumps or remains in the regions of the most intense destruction. On the other hand, he maintained that at times it was the result of proliferation of the interacinous gall ducts leading to the formation of new cell strands. In all probability these factors act together. Dr. Epplen makes an interesting comparison between acute yellow atrophy and cirrhosis of the liver. He regards them as analogous conditions, differing only slightly in the nature of their pathological processes, but very markedly in their degree. He states that one is acute and the other chronic and that both are nearly always fatal. Occasionally a patient survives acute yellow atrophy sufficiently long for regeneration to occur in a degree extensive enough to cause resemblance to the chronic condition, in which regeneration is always present.

## RAYNAUD'S DISEASE.

THE ætiology of the condition described by Raynaud in 1862 and known as Raynaud's disease has puzzled clinicians and pathologists up to the present day. The clinical manifestations were admirably recorded by the discoverer, but many subsequent writers have introduced a certain degree of confusion into their accounts of the signs and symptoms. Raynaud himself dealt with the condition as a local asphyxia of the extremities. He also introduced the term "local syncope" to signify the condition observed in the early stages of the disease. Unfortunately, he attached more importance to the symmetry of the lesions than is justified. The obscurity of the process is in itself a potent reason for a close study of every series of cases.

We should therefore welcome the publication by Dr. J. Arthur Buchanan, of the Mayo Foundation, of a clinical study of a series of sixty-seven case histories of patients treated at the Mayo Clinic since the year 1911.[1] This study reveals that no ætiological factors could be discovered to explain the condition. The incidence of the disease varied within narrow limits. The patients came from many different districts and countries and the closest attention to this aspect forced the author to conclude that birth-place and residence had no connexion with the causation of the disease. Similarly it appeared that neither occupation nor social status bore any ætiological relationship to the disease. The onset was not associated with any unusual frequence of an infection, nor did the disease occur in persons with an hereditary tendency to the same condition. Only one of the patients was under ten years of age; the age group of greatest incidence was the third decade. The disease appeared relatively often up to the age of fifty years, after which age it seldom occurred. A somewhat surprising fact was discovered in regard to the duration of the disease. Only eight of the fifty patients who could be traced, had died up to the time of the compilation of the statistics. It is stated that twelve had improved, that thirteen were in good general health and that two were quite recovered. The disease lasted for less than five years in thirty-seven patients, for more than five and less than ten in fifteen patients and for more than ten years, but not more than thirty years in thirteen patients. In one patient it lasted for forty and in another it lasted for forty-five years. It would therefore seem that the prognosis is by no means as bad as it is commonly held to be. The onset was sudden in sixty patients out of a total of sixty-seven.

In analysing the symptomatology, Dr. Buchanan recognizes an initial local syncope, manifested by a dead appearance of a limited area usually of an extremity with extreme lowering of temperature of the part affected. The local syncope may last for from fifteen minutes to two hours. This stage was noted in nine of the patients. The second stage of local asphyxia is characterized by a bluish or violet coloration, often of a mottled kind, with some lowering of temperature. The skin is often clammy with sweat and the patient complains of much associated pain. Pure local asphyxia was noted six times. The third stage of gangrene again is of a peculiar type. The drying and subsequent sloughing of an area without previous attacks of local syncope and local asphyxia are rare. On the other hand, the alternation of local syncope and local asphyxia is very common. In no less than twenty-eight patients the condition did not proceed to gangrene. Local asphyxia and gangrene proved somewhat more common than local syncope, local asphyxia and gangrene. Local hyperæmia is not infrequent. It usually followed as a reaction on attacks of local syncope. In 56.7% of the patients the lesions were bilateral and symmetrical, while in 43.2% they were asymmetrical. Spontaneous amputation usually affected the fingers or toes, but in one patient it involved both forearms and in another it resulted in the loss of the leg and part of the thigh. Small, gangrenous areas often appeared over the entire body. In a few instances they affected limited areas in various situations. The blood pressure, the pulse pressure, the composition of the blood and the pulse rate showed some variations, but these variations were so irregular that it was obvious that no constant mechanism was at work. Cold appeared as an exciting cause in several of the patients and in a few the attacks of local syncope were kept at bay by the avoidance of exposure to a lowered temperature. It is certain that the unknown cause acts on the arterioles, capillaries and venules simultaneously and that the chief manifestations are produced by a vaso-constriction of all three systems. Whether the essential cause acts on the central nervous system or not is unknown.

[1] *The American Journal of the Medical Sciences*, July, 1922.

# Abstracts from Current Medical Literature.

## MORPHOLOGY.

### Development of the Inferior Vena Cava.

GEORGE S. HUNTINGTON AND CHARLES F. W. MCCLURE (*The Anatomical Record*, December 20, 1920) publish the results of their studies dealing with the development and abnormalities of the *vena cava inferior*. The main points of their teaching are given below. In the first stage the right and left post-cardinal veins exist as longitudinal trunks. These veins are connected with the sub-cardinal veins. The blood passes from the post-cardinal veins into the duct of Cuvier and thence into the heart. The hepatic vein, which delivers blood from the liver to the *sinus venosus*, is quite separate. The sub-cardinal veins anastomose to form the sex veins, the suprarenal veins and portion of the inferior *vena cava*. In the second stage the veins joining the sub-cardinal veins, called the inter-sub-cardinal veins, enlarge and unite with the common hepatic vein. At the same time the post-cardinal veins divide into a lumbar and a thoracic portion. The lumbar portions join with the inter-sub-cardinal veins. The adrenal vein is formed from the remainder of the sub-cardinal veins. In the third stage the supra-cardinal veins, two in number, lie behind and to the side of the aorta. They connect with the inter-sub-cardinal veins to form a ring around the aorta, called the renal collar. The lumbar portion of the post-cardinal veins and the hepatic veins join this ring as well. Each supra-cardinal vein is linked up with each lumbar portion of the post-cardinal vein in two regions, in the regions of the kidney and of the hind limb. The ureter runs through this venous ring. In the fourth stage the supra-cardinal veins break up into a thoracic or pre-renal and a lumbar or post-renal system of veins. The pre-renal system forms the greater part of the azygos system of veins. The lumbar portion of the post-cardinal veins tends to replace the lumbar portion of the post-cardinal veins. The latter atrophy at their hind ends and remain as lateral off-shoots of the renal collar, having the function of draining the sex veins. At this stage the inferior *vena cava* consists of the hepatic vein, the sub-cardinal part of the renal collar and the post-renal supracardinal veins. In the final stage the renal collar persists on the right side of the aorta. The right supra-cardinal vein absorbs the left vein and the right side of the renal collar elongates to become the adult inferior *vena cava*. The primitive right renal veins and the remnant of the right post-cardinal veins, now the sex vein, open into the elongated renal collar. The left side of the renal collar persists ventrally to receive the primitive renal veins and left post-cardinal and left sex veins. A large amount of further data is given in the article.

### The Effect of Radium Emanation on Development.

HALSEY J. BAGG (*The American Journal of Anatomy*, January 15, 1922) records the results of his investigations into the disturbances in development produced in rats by radium emanations. Following the injection of radio-active solutions into female rats after mating, a number of the young were unaffected. In other cases no embryos developed, others were absorbed or were aborted, whilst others showed hæmorrhagic extravasation into the subcutaneous tissues of the back or face. When the injections were made before mating, the majority of the young were unaffected, but several were born with subcutaneous hæmorrhages. Intravenous injections of these solutions into pregnant rats were rapidly fatal to the embryos. In a second series of experiments the effects of radiating nearly full-term pregnant rats were investigated. A dose of 3,378 millicurie hours was fatal to the embryos. Following doses of 1,350 millicurie hours all the young were normal at birth. In about ten days after treatment half of these became anæmic, showed symptoms of diffuse œdema and died. The other half survived and grew to a normal size, but with several definite pathological changes. The eyes became smaller, the pupils opaque and finally there was nearly complete closing of the lids and total blindness. Their neurological reactions were normal, although at autopsy developmental disturbances of the central nervous system were discovered; there was great reduction in size of the cerebral hemispheres and the optic tracts were atrophic. The eyeball itself was reduced to one-fourth its normal diameter. Many were sterile, the testes being decidedly atrophic or the ovary reduced to about a quarter its normal size. Other organs were apparently normal. These results show the selective action of radium emanations on fast-growing embryonic structures and it is suggested that in the cases treated before fertilization, the faculty of the later developing embryos to form proper blood vascular endothelium has been interfered with in some way. In conclusion, the writer warns physicians against the possibility of producing developmental arrests when treating pregnant women, as well as the possibility of altering the human germ cells by irradiation previous to conception. At the same time, though it is his opinion that such changes are biologically possible, he does not wish it to be understood that he regards the present-day clinical irradiation as productive of these changes.

### Heart Muscle and the Sino-Ventricular Bundle.

LEE D. CADY (*Anatomical Record*, July 20, 1921) undertook the re-investigation of the sino-ventricular bundle and of the Purkinje fibres of the heart, with a view to checking Retzer's conclusion that worn-out myocardial fibres are regenerated by transformation of Purkinje fibres and that the latter in turn are derived from cells of the sino-ventricular system. Histological studies have long revealed a direct transition between the Purkinje fibres and the myocardial fibres. Approximately twenty rabbits' hearts were studied by various methods. They showed the conducting fibres with extraordinary detail in routine preparations. Various standard methods of fixing and staining were employed, *e.g.*, Zenker's, Zenker-formol, Flemming's and other fixing solutions and hæmatoxylin and eosin, with other special stains. In the rabbit, the node agrees closely in microscopic appearance with the human type as described by Keith and Flack. The nodal fibres are striated and fusiform, with well-marked elongated nuclei. They are arranged in a plexiform manner and are embedded in a dense connective tissue. The Purkinje fibres were found to be larger than the myocardial fibres but they gradually diminish in diameter at the transition point into the myocardial fibres and take on a more conspicuously striated and fibrillated appearance. In discussing the question of the regeneration of heart muscle from the sino-ventricular bundle and Purkinje fibres, the author points out that the bundle appears very early in embryonic life. On this account he considers that the cells composing it are probably highly specialized and that this is against their having regenerative powers. Further, the evidence from Keith and Miller's case of syphilis of the heart is against this view. Keith and Tawara also found that the conducting system neither enlarges with cardiac hypertrophy nor diminishes with atrophy of the heart muscle. No evidence was found by Erlanger of regeneration of the bundle, following crushing or other experimental injury. Finally, the author considers that the question as to whether the sino-ventricular bundle contracts cannot be determined by present histological methods.

### Growth of the Central Nervous System in the Human Fœtus.

HALBERT L. DUNN (*Journal of Comparative Neurology*, December 15, 1922), working on one hundred and fifty-six human fœtuses, gives the following summary of his investigations on the growth of the central nervous system during the fœtal period. In general character this is similar to the growth of other viscera. There are three distinct sub-types of growth. There is a relatively slow but steady increase in the volume of the cerebrum prior to the sixth month, followed by a more rapid increase until birth. Growth of the cerebrum in linear dimensions is steady and constant from the second month onward. In the brain-stem and cord growth is more rapid during the first half of the fœtal period than during the latter half. For the first five months growth in the cerebellum proceeds slowly, but from the sixth month until birth it is extremely rapid.

## ORTHOPÆDIC SURGERY.

### Repair of Tendons in the Fingers.

STERLING BUNNELL (*Surgery, Gynecology and Obstetrics*, July, 1922) describes the restoration of fingers in which tendons have been injured as one of the most baffling problems of surgery. To obtain successful results an atraumatic technique is essential. The smallest scratch on a tendon or sheath means a possible adhesion to interfere with the gliding mechanism. Damaged tendons in fingers can only be restored by free transplantation of new tendon together with a gliding mechanism. It is quite useless to try to suture a tendon in its length within the finger. Free tendon grafts may be obtained from the *flexor sublimis* of the fingers, the *palmaris longus*, the long extensors of the toes and other sources. The transplanted tendons must be sutured securely with silk and the author advises that the suture should embrace only the half of the tendon away from the mesotenon. This insures a better union with the point of attachment. Incisions in fingers should never be in the mid-line, but are better placed laterally. In the palm incisions should be transversally placed. It is quite useless to attempt to repair tendons in the presence of stiff joints; if these cannot be mobilized, amputation is the best course to pursue. The thin, red, shiny finger with stiffened joints which results after infection, is always unfit for repair of tendons. In after-treatment it is best to avoid splinting the fingers. Movement should be encouraged from the beginning, but not until after the fifth week is it safe to allow unrestricted use of the repaired tendon. In these cases a guarded prognosis is necessary, though it is usually possible to restore 80% to 95% of lost function.

### Synovial Membrane Tumours of Joints.

F. W. HARTMAN (*Surgery, Gynecology and Obstetrics*, February, 1922) reports one instance of tumour of the synovial membrane in the knee joint and reviews sixteen others which appear in the literature of the subject. His own case occurred in a male aged twenty years. The patient complained of pain, swelling and sudden collapse of the joint during weight bearing. After rest and local applications the swelling was reduced and a mass 1.5 centimetres in diameter could be felt on either side of the patella. On opening the joint these masses were found to be firm and elastic, reddish-brown or grey in colour and rather granular. About fifty cubic centimetres of blood-stained fluid escaped from the joint through the wound. The microscopic examination of the specimen removed indicated further operative interference. The joint was then carefully laid open and reddish-brown masses were found attached to the synovial membrane all over the joint. The whole joint surface was reddish-brown in colour and all the intra-articular structures were found to be involved and were removed. The articular surfaces alone were free from infiltration. The actual tumour masses varied from the size of a pea to that of a walnut. A description of the histological findings is given and the opinion is expressed that in the case under discussion and in others reported the tumour should be regarded as of a myeloid nature with benign characteristics, but with potential malignant properties.

### Intraperineural Neurotomy in Spastic Conditions.

J. J. NUTT, who introduced intraperineural neurotomy for the treatment of spastic paralysis in the year 1909, has since then performed the operation twenty-seven times and makes a further report upon its usefulness (*The Journal of Bone and Joint Surgery*, July, 1922). The technique of the operation is described as follows: After exposing the nerve the neurilemma is divided by a longitudinal incision and the nerve itself lifted out. Two or three anchoring sutures are placed above and below the site of the proposed neurotomy to prevent rotation. The nerve is divided with a sharp knife and the anchoring sutures are tied. The sheath is sutured and the part put up in plaster of Paris. When the patient is first seen passive movements alone are used and are performed three or more times a day. In an untreated case improvement will occur in a few weeks. Any remaining contractures are treated by stretching under anæsthesia or by performing tenotomies. The actual intraperineural neurotomy is then done and may be combined with resection of nerves supplying various muscles. All the joints are forced through their usual range of movement and the patient is encased in plaster of Paris from the toes to the axilla with the hips abducted, the knees extended and the feet at right angles to the foot. The patient attempts to walk in braces six weeks after the operation. The progress of one patient is outlined.

### Spontaneous Healing Inherent in Transplanted Bone.

S. L. HAAS (*The Journal of Bone and Joint Surgery*, April, 1922) has carried out experiments to determine whether the cells of bone possess an independent power of proliferation after transplantation. He studied the behaviour of the cellular elements and their response towards the healing of a fracture in bone transplanted into a muscular bed. This, he contends, eliminates the influence of the cells in the bony bed to which is often attributed the success of a bone graft. In the first experiments a phalanx from the hind foot of a dog was removed, fractured completely through the centre and placed in the muscles of the back, with the fragments in apposition. After seventy-three days the bone was thinner, but the fragments had firmly united. In the second experiment the fourth metatarsal bone from the hind foot was removed, fractured completely, except for a small strip of periosteum, and buried in the muscles of the back. After seventy-one days the fragments were united with very little evidence of callus. This bone had also undergone atrophy of functional stimulation. The author concludes that these experiments demonstrate the superiority of live bone over dead bone and other material for any purpose where a transplant is indicated.

### Mechanics and Treatment of Fractures of the Forearm.

PAUL B. MAGNUSON (*The Journal of the American Medical Association*, March 18, 1922) says that fractures of the forearm offer more problems in mechanics than any other fractures in the body. The radius can be considered as an extension of the hand upwards, tapering towards its proximate extremity and the ulna an extension of the arm downwards, tapering towards its distal extremity. Distinctions are drawn between the functions of the two bones. Fractures occur most frequently in the lower third of the forearm because the bones in this part are less well protected with heavy muscles than in the upper part of the forearm; the ulna is weaker and the hand exerts a direct pull on the lower part of the radius, to which it has a wide attachment. Attention is directed to the damage that can be done to the inferior radio-ulnar joint in a Colles's fracture. The radius is driven backwards and upwards, tearing the radio-ulnar ligament and, if improperly reduced, the disturbance of relationship may produce a limitation of supination. Fractures above the *pronator radii teres* muscle and below the *supinator brevis* and *biceps* muscle insertions should be treated by operation. Treatment is divided into non-operative ambulatory, non-operative recumbent and operative treatment. A method of recumbent treatment is described and emphasis is laid upon the necessity for extension in the fracture. Operative treatment is often advisable. This should be done through lateral incisions. In uniting the bones ivory is preferred because it is absorbable and strong.

### Posterior Dislocation of the Foot.

T. TURNER THOMAS (*Surgery, Gynecology and Obstetrics*, July, 1922) has treated eight cases of posterior dislocation of the foot during the last three years. From his own observation and those of Quénu he has come to the conclusion that this deformity is always accompanied by a posterior marginal fracture of the tibia. It is not necessarily associated with a Pott's or Duputren's fracture. The cause of the disability is a force driving the foot upwards and backwards. The best method of correcting the displacement is to reverse the fracturing force and endeavour to pull the foot into dorsi-flexion and finally into abduction or adduction, according to what is necessary to correct the lateral displacement of the foot. Correction should always be followed by an X-ray examination. Plaster of Paris makes the best retentive apparatus.

# British Medical Association News.

## SCIENTIFIC.

A MEETING of the Queensland Branch of the British Medical Association was held at the Hospital for Sick Children, Brisbane, on May 25, 1922, DR. G. P. DIXON, C.B.E., the President, in the chair.

### Skiagrams.

DR. VAL. MCDOWALL presented a skiagram to illustrate the Marie-Strumpel type of ankylosis of the spine.

DR. C. E. TUCKER showed a skiagram to illustrate a fracture of the ulna at the junction of the upper and middle thirds of the bone, associated with dislocation of the superior radio-ulnar articulation. The patient was a boy, aged nine years, who had fallen on his hand while jumping over a hurdle.

### Hare Lip and Cleft Palate.

DR. DONALD A. CAMERON presented an infant on whom he had performed a modified Brophy operation for hare lip and cleft palate.

### Nasal Polypus.

DR. W. N. ROBERTSON, C.B.E., exhibited a large nasal polypus which he had removed from a boy, aged ten years. It had been attached to the posterior choana and had been hanging down below the soft palate.

### Extra-Uterine Gestation.

DR. A. H. MARKS showed a fœtus which had been found in a blood clot lying free in the peritoneal cavity. The gestation had been extra-uterine.

### Pulmonary Abscess.

DR. NEVILLE G. SUTTON showed a male infant which had been admitted to the hospital on account of a right lobar pneumonia. A pulmonary abscess had supervened. The abscess had been explored and the pus obtained had been found to contain streptococci and pneumococci. The abscess had been opened and drained. Steady improvement had followed and the infant had made a good recovery.

He also read the notes dealing with the illness of a boy, aged eight years. The child had suffered from empyema and an operation had been performed six weeks previously. The wound had healed, but the patient had continued to cough up offensive material. He gradually became worse and was readmitted to hospital with a discharging sinus. A skiagram revealed a rounded shadow in the centre of the lung after an injection of bismuth. The abscess had been drained and at the time of the meeting it was discharging freely. The sinus was found to be opening into a bronchus.

DR. D. A. CAMERON expressed the opinion that children responded better to treatment than did adults. When an adult was effected with pulmonary abscess, the wound tended to become partially healed; they frequently became chronic invalids. In many instances pulmonary abscess appeared to follow the removal of tonsils and adenoid vegetations. Interlobular empyemata were often mistaken for pulmonary abscesses.

DR. E. S. MEYERS asked Dr. Sutton whether he had found a pyogenic membrane in the boy. He was of opinion that when the abscess was complicated with bronchial fistula, the patient did not improve as readily as when the condition was uncomplicated.

DR. S. F. MCDONALD inquired whether an obliterative operation of the Estlander type was applicable to this condition.

In his reply, DR. SUTTON stated that no membrane had been felt on digital exploration of the cavity in the boy. Obliterative operations were usually carried out in adults. He was doubtful whether they would prove effective in children, especially in the presence of bronchial fistulæ.

### Condylomata of the Vulva.

DR. A. GRAHAM BUTLER, D.S.O., presented a female infant with condylomata of the vulva. The condition had been present for seven months. No gonococci had been detected. He was awaiting the result of the Wassermann test.

### Osteo-Myelitis of the Femur.

DR. J. J. POWER, D.S.O., showed a boy, aged four years, who was suffering from osteo-myelitis of the neck of the femur, with an abscess at the lower end of the right ulna. At the time of admission there had been œdema of the superficial tissue of the thigh. There had been signs of involvement of the femur. On making an incision he had found that the deeper structures were normal and consequently he did not proceed any further. Later the metastatic abscess had developed in the ulna. There had been no signs of inflammation and a skiagram had revealed a sequestrum. He had not operated, as the condition seemed to be subsiding and the child's general health was good. He asked for an expression of opinion as to the advisability of opening both lesions.

DR. NEVILLE SUTTON recommended this course, as the presence of a pyæmic focus in the ulna indicated that other foci would probably form for some time.

### Epidemic Encephalitis.

DR. D. E. TRUMPY, of Ipswich, opened a discussion on the epidemic of encephalitis. He said that he had seen eleven patients with this disease. One was a child aged eleven years and the remaining ten were children under seven. The majority were between three and four years of age. The onset was sudden. The child became irritable and drowsy and convulsions followed. The actual type of the convulsions varied. At times they were generalized; sometimes they consisted of small twitchings of the limbs or face; at other times there were general movements of the limbs. When the convulsive movements ceased, the muscles of the affected limbs were in a spastic condition. The arms were firmly flexed and the legs were kept in hyper-extension. The spasticity in some instances led to the development of opisthotonus. The pressure of the cerebro-spinal fluid varied considerably, even in the same patient. The fluid withdrawn by lumbar puncture did not contain any abnormal elements. The temperature on admission was high, the average being about 39.5° C. (103° F.). In one patient it had rien to 43° C. (109.4° F.) before death and after death it had risen beyond the highest degree marked on the thermometer. Treatment had been symptomatic. One child had recovered. In this instance the diagnosis had been in doubt. The majority of the patients had died within thirty-six hours of admission to hospital.

DR. J. A. CAMERON, of Ipswich, related his observations of two patients. The first was a girl of ten years who had run a splinter into her foot. The splinter had been removed and an injection of anti-tetanic serum had been given. Three hours later she had had high fever and she had become drowsy and convulsions had taken place. The parents had naturally blamed the serum. The child had died in eighteen hours. The second patient, a child aged four years, had become ill with fever and gradually increasing drowsiness. The convulsions had at first been confined to one arm and one leg. Then the other side had become implicated and tetanic spasms had developed. The spasms had been ushered in by a scream and all the limbs had become contracted. The drowsiness had lasted for seven days. The fever and the convulsive attacks had gradually lessened. The child was taking notice of objects at the time of the meeting. It was very limp and its muscles flaccid. There was no residual paresis, though foot-drop had been noticed at first.

DR. M. S. PATTERSON, of Ipswich, stated that he had carried out a *post mortem* examination of one patient. He had not found any obvious pathological lesions. On the vertex of the brain over the motor area were many small nodules. He had sent a specimen to Dr. Duhig, who would report on it at the next meeting.

DR. T. H. R. MATHEWSON referred to a typewritten *résumé* of the cases which had occurred in patients at the Hospital for Sick Children, Brisbane. He also referred to an article by himself and Dr. Oliver Latham entitled "Acute Encephalitis of Unknown Origin," which had been published in THE MEDICAL JOURNAL OF AUSTRALIA (October 27, 1917, pages 352 to 357). He considered that the present epidemic was identical with that of 1917. He agreed with Crookshank, who had stated in the course of a discussion on epidemic encephalitis, held at the Royal Society of Medicine in October, 1918, that they were dealing with a disease which for years had been associated with epidemics of myelitis, polio-myelitis, mes-encephalitis and influenza. Dr. Mathewson wished to amplify this by including polio-encephalitis in the term polio-myelitis. Crookshank had pointed out that there had been a change of type, but there had also arisen a change in their conception of disease. They were apt to regard a new conception of a disease as a new disease. Particular diseases were conceptual, but they were associated in the minds of medical practitioners with various signs and symptoms. Crookshank had stated further that no one would claim that the epidemic that had occurred shortly before the date of the discussion at the Royal Society of Medicine was one of polio-myelitis, although it was chiefly one of polio-encephalo-myelitis. But he did claim that epidemic encephalitis and epidemic polio-myelitis were made of the same material and formed part of the same suit. The observed difference, one entirely quantitative and not specific, did not warrant the belief in two different diseases. It was perfectly compatible with what Wickham had said concerning the protean nature of Heine-Medin disease. It was not a case of discovering or observing a new disease, but of re-arranging or extending their conceptions of an old one, namely, Heine-Medin disease.

DR. J. V. DUHIG read a paper on the pathology of encephalitis (see page 261).

DR. W. A. SAWYER gave an account of the administrative work during an epidemic of polio-myelitis in California (see page 263).

DR. R. W. TELFORD stated that at the end of April a medical practitioner in Gatton had notified the Commissioner of Public Health that he had had under treatment four children with an affection of unknown nature and that three of them had died. He had expressed the opinion that the illness in these children had been a polio-encephalitis with meningeal symptoms. The Commissioner of Public Health had addressed a pamphlet to all medical practitioners, describing the symptoms and asking to be informed should further cases of the same nature be observed. Dr. Telford was glad to state that the response had been very good and that up to the time of the meeting sixty cases of this affection had been notified from various parts of Queensland.

In referring to the Lowood epidemic, Dr. Telford said that one child had been affected early in April, while a second member of the same family had been affected at the end of the month. In another family two members had become affected within six weeks. He asked for an expression of opinion as to the length of the period of incubation of the disease. It had apparently varied between fourteen days and six weeks. The oldest patient he had seen had been fourteen years of age. Previous speakers had not mentioned the foul-smelling stools, which had been noticed in all occasions. This, he thought, might be due to auto-intoxication and have nothing to do with the disease itself. The two patients who died at Gatton were females, aged sixty-five years. They had manifested symptoms closely resembling those of *encephalitis lethargica*. The disease was not notifiable at the time of the meeting. He asked the members for an expression of opinion concerning the advisability of declaring the disease a notifiable infectious disease.

The members were unanimously of the opinion that it should be declared a notifiable disease.

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DR. A. GRAHAM BUTLER, D.S.O., stated that he remembered small epidemics of both polio-myelitis and polio-encephalitis occurring at varying periods throughout Queensland. He thought that the disease in the two elderly female patients had been very suggestive of *encephalitis lethargica*. Dr. Sawyer's remarks had suggested the need for better cooperation between the public health department and the general practitioner. He considered that the present outbreak was one of the cerebral type of polio-myelitis.

DR. DONALD A. CAMERON asked if all the cases were severe. He had seen several attacks of a mild nature and the patients had recovered. They had not been recognized as instances of this disease at the time.

DR. D. GIFFORD CROLL, C.B.E., had seen many patients with a milder type of the disease last year in the Children's Hospital. Anterior polio-myelitis was also occurring at the time of the meeting. The youngest patient he had seen with encephalitis was an infant five weeks of age whose father had been working at Ipswich.

DR. F. C. BECHTEL related the history of a child of eighteen months. The attack had begun with convulsions which had ceased after bowel lavage. On the following day there had been no movements of the right arm and leg. Movements had returned later in the day, but on the following morning there had been a right hemiplegia associated with rolling of the eyes and twitchings of the limbs on each side alternately. Babinski's sign had been elicited on the right side. Fever had been present on the first day, but the temperature had fallen to normal. The stools had been foul smelling. The child had been sent to the Children's Hospital with the diagnosis of encephalitis, but further examination had proved that the condition was an unusual type of *polio-myelitis anterior*. Dr. Bechtel also referred to the history of another patient who had been admitted to the Children's Hospital. In the case of a child, aged fifteen months, there had been convulsions and screaming attacks with flaccidity of all the limbs. The cerebro-spinal fluid had been under increased pressure. On the following day the child had recovered. He had been puzzled concerning the nature of the illness.

DR. T. L. COONEY, of Ipswich, had seen ten patients suffering from epidemic encephalitis from Ipswich, Lowood and Gatton. The patients had not lived within two miles of one another and there had been no communication between them or between the parents. Two children who had died of the disease had attended separate schools. No further infections had taken place at either school. One child, aged six weeks, had not been out of the house, but his father, a medical practitioner, had been treating patients with the same condition. The temperature in this child had come down and the twitchings had continued for four days, even after the child had become apparently well. In a child from Rosewood, aged four years, the temperature had been 38.9° C. (102° F.) and the stools had been very offensive. This odour had been noticed in all the patients. The child had retained sensation on the left side of the body, but the limbs were paralysed. On the right side sensation had been absent and the limb had been motionless. On the following day the child could move its limbs on both sides. It had regained power and had recovered. In many of the patients he had noticed spasticity on one day and flaccidity on the next. The thumbs had always been flexed on the palms with the fingers tightly contracted over them. The cerebro-spinal fluid had always been under increased pressure. It had been found to be clear and sterile. Death had occurred from respiratory failure in the three children who had died while he was present.

DR. T. H. R. MATHEWSON, replying to Dr. Telford's question concerning the length of the incubation period, stated that in monkeys the incubation period of polio-myelitis was between three and thirty-three days; the average was from seven to nine days.

DR. J. V. DUHIG stated that laboratory investigations of the mild infections would probably show that they were true instances of encephalitis.

DR. SAWYER stated that he had frequently found that acute polio-myelitis was preceded by attacks of acute diarrhœa or constipation.

A MEETING of the Western Australian Branch of the British Medical Association was held at the Perth Hospital on June 21, 1922, DR. W. TRETHOWAN, the Honorary Treasurer, in the absence of the President, in the chair.

### Fashionable Midwifery.

DR. J. KYNASTON COUCH read a paper entitled "Fashionable Midwifery" (see page 264).

DR. TRETHOWAN thanked Dr. Couch for his valuable paper and asked members to discuss it more particularly from the point of view of their own experience.

DR. E. A. OFFICER thought that the practice outlined by Dr. Couch was ideal if applied at an institution like the King Edward Hospital. He did not think it always practicable in private practice. He was not in favour of the indiscriminate induction of "twilight sleep."

DR. W. J. BEVERIDGE and DR. W. H. NELSON spoke in favour of curettage for septic abortion.

DR. M. KASNER MOSS held that forceps were invaluable under certain circumstances. He was also in favour of the use of vaccines for some infections. He expressed the opinion that many septic infections were due to auto-infection.

DR. J. E. FERGUSON STEWART advocated the immediate suture of torn perineum, even when the tear was very slight. His own results had been very good.

In closing the discussion, DR. W. TRETHOWAN stated that it appeared to him that many of Dr. Couch's statements had been made for the purpose of provoking discussion. He was satisfied that forceps, if properly used, were of great value. He also regarded careful vaginal examination as necessary and useful. In septic infections with decomposing débris curetting and douching were beneficial.

DR. COUCH replied briefly.

## NOTICES.

THE COUNCIL OF THE VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION has arranged the following provisional programme of the Branch meetings. The Scientific Committee reserves to itself the right to modify the arrangements, but it is hoped that no changes will be necessary.

**September 6, 1922.**

CLINICAL MEETING at St. Vincent's Hospital, Melbourne, at 8.15 p.m..

**October 4, 1922.**

*At the Walter and Eliza Hall Institute of Research in Pathology and Medicine, Melbourne Hospital, at 8.15 p.m.*

DR. H. DOUGLAS STEPHENS: "Clinical Symptoms of Enlarge- of the Spleen in Children."

DR. S. O. COWEN: "Familial Splenomegaly."

DR. K. HILLER will open the discussion.

**November 1, 1922.**

CLINICAL MEETING at the Children's Hospital, Carlton, at 8.15 p.m..

## NOMINATIONS AND ELECTIONS.

THE undermentioned have been elected as members of the Western Australian Branch of the British Medical Association:

BENNETT, CHARLES HAROLD, M.B., B.S., 1920 (Univ. Melbourne), Children's Hospital.

FRAYNE, ERNEST JOHN, M.B., B.S., 1908 (Univ. Adelaide), Perth Hospital.

# Post-Graduate Work.

## POST-GRADUATE WORK IN MELBOURNE.

THE MELBOURNE PERMANENT COMMITTEE FOR POST-GRADUATE WORK has issued a provisional syllabus for the course in obstetrics to be held at the Women's Hospital, Melbourne. This course has been designed to meet the requirements of candidates for the M.D. examination in obstetrics and medical gynæcology. The course will, however, be open to all medical graduates. The fee for the course has been fixed at four guineas (£4 4s.).

PROVISIONAL SYLLABUS.

**September 5, 1922 (11 a.m.).**

Lectures in the Ante-Natal Clinic, by DR. R. N. WAWN and DR. R. FOWLER, O.B.E..

**September 8, 1922 (11 a.m.).**

Lectures in the Ante-Natal Clinic, by DR. R. N. WAWN and DR. R. FOWLER, O.B.E..

**September 12, 1922.**[1]

"The Examination of Obstetrical and Gynæcological Patients," by DR. E. R. WHITE.

**September 15, 1922.**

"The Mechanism of Labour," by DR. R. W. CHAMBERS.

**September 19, 1922.**

"Version, Breech and Forceps Cases," by DR. R. W. CHAMBERS.

**September 22, 1922.**

"Abdominal Diagnosis; Induction of Labour: Its Indications and Methods, etc.," by DR. H. CAIRNS LLOYD.

**September 26, 1922.**

"Ante-Partum Hæmorrhage," by DR. A. W. D. ROBERTSON.

**September 29, 1922.**

"The Methods of Delivery in Abnormal Cases, including Occipito-Posterior Presentations," by DR. H. CAIRNS LLOYD.

**October 3, 1922.**

"The Treatment of the Puerperium and of Post-Partum Hæmorrhage," by DR. R. N. WAWN.

**October 6, 1922.**

"Puerperal Sepsis, including Abortion," by DR. R. H. MORRISON.

**October 10, 1922.**

"Pathology: Macroscopic and Microscopic," by DR. A. M. WILSON, D.S.O..

**October 13, 1922.**

"The Child: Attention During and After Birth, including Injuries, etc.," by DR. A. M. WILSON, D.S.O..

During the course of the lectures patients will be demonstrated. Certain lectures will be illustrated by the use of the manikin and pathological specimens.

Recently DR. R. H. MORRISON delivered a post-graduate lecture at Ballaarat for the benefit of medical practitioners who were unable to attend meetings in Melbourne. Another lecture will be delivered at Bendigo in September.

[1] The class will be asked on September 8 to determine the hour for the meeting of September 12 and of subsequent meetings. It is suggested that the hour of 4 p.m. would be convenient.

# Research Endowment.

## FOULERTON RESEARCH FUND.

WE have recently published an advertisement of the Royal Society inviting candidates to apply for the Foulerton Research Professorhip. This appointment will be made by the Council of the Royal Society on the recommendation of a committee of Fellows, provided that candidates of sufficient distinction present themselves. The Foulerton Research Professor will be required to conduct original research in medicine or the contributory sciences calculated to promote the discovery of the causes of disease and of the relief of human suffering. While the Professor will devote the whole of his time to research, the Council of the Royal Society may consider the appointment of a practitioner holding a paid academic or other scientific position. In such a case the retention of this position may not interfere with the discharge of the Professor's duties. The stipend will be at least £1,400 *per annum*. Should the successful candidate hold another position, the stipend paid from the fund together with the salary of the other position shall be not less than £1,400 *per annum*.

The appointment will be for five years, but will be renewable on the recommendation of the committee for further periods not exceeding five years each. The normal retiring age will be seventy, but in exceptional cases a Foulerton Research Professor may be allowed to continue for a further specified period by resolution of the President and Council of the Royal Society.

Candidates may be of either sex. In their applications they should state their age and their qualifications for the service. They should also give references to not more than three persons who can speak as to their previous work and experience in research. The applications should be marked on the outside "Foulerton Studentship" and must reach the Royal Society, Burlington House, London, W.1, not later than October 31, 1922.

# University Intelligence.

## THE UNIVERSITY OF SYDNEY.

AT a meeting of the Senate of the University, held on August 14, 1922, the degree of Master of Surgery (Ch.M.) was conferred upon DR. H. GREEN, of Rockhampton, Queensland, *in absentia*, and the degree of Doctor of Science (D.Sc.) upon MR. W. H. BROWNE, B.Sc., in person.

The following appointments were made:

DR. R. B. TRINDALL as Honorary Demonstrator in Anatomy.

MR. DONALD SMITH and DR. E. F. DECK as Lecturers in Dentistry for a further period of twelve months from December 31 next.

A letter was received from DR. J. E. V. BARLING, Lecturer and Chief Demonstrator in Pathology, resigning his position as from the end of Trinity Term. In accepting the resignation, it was decided to send a letter of appreciation of Dr. Barling's services to the University during the twenty-two years he had held the position.

On the recommendation of ACTING PROFESSOR MAGUIRE, DR. S. A. SMITH, DR. H. R. G. POATE and DR. J. C. STOREY were appointed Examiners for the Third Degree Anatomy Examinations and on the recommendation of PROFESSOR SANDES, DR. J. L. MCKELVEY and DR. A. ASPINALL were appointed as additional examiners for the Fourth Degree Examination in Surgery and Surgical Anatomy.

The Faculty of Veterinary Science reported having re-elected PROFESSOR J. DOUGLAS STEWART, M.R.C.V.S., B.V.Sc. (Syd.), as Dean; the Faculty of Economics of having re-elected PROFESSOR H. F. IRVINE, M.A., as Dean and the Faculty of Dentistry of having re-elected PROFESSOR R. FAIRFAX READING, M.R.C.S., L.R.C.P., L.D.S. (Eng.), as Dean and the Faculty of Architecture as having re-elected PROFESSOR LESLIE WILKINSON, A.R.I.B.A., as Dean for the ensuing two years.

The following proposals of the Professorial Board concerning the recognition of courses for more than one degree were adopted:

(*i.*) That the following be inserted in the By-Laws as Section II., Chapter VIII.: "Graduates in one faculty, who desire to obtain a degree in a second faculty, shall be required (*a*) to attend courses for at least two years in the second faculty, if the curriculum of that faculty be arranged in years, or at least six courses in the Faculty of Arts; (*b*) to select courses that they have not already taken for their first degree; (*c*) to select courses, one-half of which either shall be continuous with courses already taken for the first degree, or shall in the second year's study be continuous with those taken in the first year." (Clause (*c*) shall not apply to graduates of any faculty proceeding to the degree of Bachelor of Medicine or the degree of Bachelor of Dental Surgery.)

(*ii.*) That in the By-Laws, Chapter XIV., Section 29, after the word "provisions," the words be inserted "of Chapter VIII., Section 11 and."

(*iii.*) That in the By-Laws, Chapter XII., Section 22, the following words precede the word "undergraduates," "notwithstanding the provisions of Chapter VIII., Section 11."

THE CHANCELLOR announced to the Senate the offer of £1,000 from SIR JOSIAH H. SYMON, K.C.M.G., K.C., to found a scholarship in English Literature and Language.

The Senate decided that a letter of thanks and appreciation should be sent to Sir Josiah Symon.

# Obituary.

## JAMES FRANCIS AGNEW.

JAMES FRANCIS AGNEW, whose death was announced in THE MEDICAL JOURNAL OF AUSTRALIA of July 15, 1922, was born in Glasgow on July 12, 1862. He was educated at a public school at that city. On leaving school he enlisted as a private in the British Army and served for a time in the regiment of the Guards. Later he left the Army in order to take up the study of medicine. He went through his course at Glasgow University and graduated in 1896 at the age of thirty-four years. He then travelled to Australia and almost immediately proceeded to the Pacific Islands with the object of undertaking medical missionary work. He had married an Australian lady, Miss Dunbar Ainslie, before leaving Scotland. Owing to her unsatisfactory health he was compelled to relinquish his work in the islands and therefore returned to Victoria. He continued to carry out missionary and social work in Melbourne and suburbs.

Nearly twenty years ago James Francis Agnew took over the practice of Dr. D. Stewart MacColl in Erin Street, Richmond. Although his practice was a large one, he found time and energy to participate in a variety of other activities. He was an earnest churchman and for many years was associated in the capacity of elder with the Cairns Memorial (Presbyterian) Church. When the authorities of the Salvation Army embarked on the establishment of the hospital "Bethesda" they sought and obtained his active cooperation and assistance. During his period of active practice in Richmond he was appointed Health Officer and Government Vaccinator for the City of Collingwood. He was a Justice of the Peace. Several years ago he made an unsuccessful attempt to enter Parliament.

James Francis Agnew obtained a commission in the Australian Army Medical Corps Reserve in 1909. After the outbreak of war he enlisted and on September 10, 1915, he was given a commission in the Australian Imperial Force. He was appointed to the Sea Transport Service and

was attached as Regimental Medical Officer to the Thirty-Seventh Battalion of the Tenth Infantry Brigade. On arrival in Egypt he was transferred to the No. 2 Australian General Hospital, where he served for two months. His appointment with the Australian Imperial Force was terminated on account of ill-health on March 1, 1916. After his return to Australia he disposed of his practice. As he was not again accepted for overseas service, he obtained an appointment at a base hospital. On March 11, 1918, he was appointed a Member of the Permanent Medical Referee Board in the Third Military District. On May 6, 1918, he obtained the position of Departmental Medical Officer to the Victorian Branch of the Department of Repatriation and was placed in charge of the Departmental Medical Services for Victoria. On August 26, 1918, he was transferred to the Headquarters of the Department and shortly afterwards was appointed Principal Medical Officer. His duties in this capacity included the tendering of professional advice in connexeion with the development of the policy of the Department, particularly in regard to its medical services. This entailed the supervision of all the institutions of the Department, including those taken over from the Department of Defence. He acted as medical adviser to the Repatriation Commission in all matters concerning the treatment of ex-soldiers suffering from war disabilities and was required to give advice for the guidance of the Commission in regard to all claims for pension, either on appeal or otherwise. His official duties brought him constantly into direct contact with the heads of governmental departments and with his colleagues in hospitals and other institutions. His personal qualities commended him very favourably to the members of the Repatriation Committee and the staff of the Department.

The news of his sudden death in Glasgow, while he was on leave of absence, was received with deep regret. He leaves a widow, one son (a medical student) and two daughters. His elder son was killed while serving as a stretcher-bearer in Belgium.

## HERBERT AUGUSTUS EMBLING.

THE death took place on July 8, 1922, of Herbert Augustus Embling, who was at the time stationed at the Rosemount Repatriation Hospital, Brisbane.

Herbert Augustus Embling was born at Kew, Victoria, in 1860. He was educated at the Trinity High School and, matriculating in 1876, he entered upon his medical course at the Melbourne University in 1877. He qualified as M.B., B.S., in 1882.

After graduation he availed himself of an opportunity to travel and pursue post-graduate work at Edinburgh and settled on his return in Hawthorn, in which suburb he conducted a busy practice for twenty years. Although well schooled in all phases of the work of a general practitioner, he took an especial interest and attained great proficiency in midwifery.

In the field of recreation Herbert Embling was known as an excellent shot and a keen angler.

In his early days in practice he became associated with the military forces. In 1884 he was appointed to the Military Medical Staff of the Reserve of Officers and later was attached as medical officer to the Rupertswood battery of field artillery until it was disbanded. He obtained his majority in 1895 and rose to the rank of lieutenant-colonel in 1901. In the great war he served as medical officer to several transports and for a time was in command of a clearing hospital in Egypt. After having been invalided home, he rendered further service at No. 16 Australian General Hospital, Mont Park. He was for a time the officer commanding the No. 5 Australian General Hospital at Caulfield. For some time prior to his death he held the position of medical officer to the Repatriation Department and in this capacity died, as many aspire to do, "in harness."

Herbert Augustus Embling was twice married. A daughter, Mrs. Harold Skamp, was his sole family by his first wife, formerly Miss Henty, of Kew. His widow, formerly Miss Cain, of Gippsland, and an unmarried daughter also survive him.

# Correspondence.

## PFEIFFER'S BACILLUS AND INFLUENZA.

SIR: In the journal of July 29 I read with interest your leader upon the ever-green controversy concerning Pfeiffer's influenza bacillus and its relation to influenza.

I do not for one moment consider myself competent to call in question the conclusions of that eminent bacteriologist, Dr. Bloomfield, but I am nevertheless distinctly sceptical of the suggestion that the influenza bacillus has no pathological significance.

It is true that my evidence against this non-pathogenicity is limited, but two cases in which Pfeiffer's bacillus appeared to be the only organism present, stand out in my memory most vividly, whilst one, a case of meningitis in a child, has a number of parallels which have been described by other observers.

Douglas in 1907, Dudgeon and Adams in the same year, McDonald in 1908, Ritchie in association with McDonald and again in 1910 (three cases), Herbert Henry in 1912 (a number of cases) have all described cases of meningitis, generally occurring in young children and nearly always fatal, in which Pfeiffer's bacillus was isolated from the cerebro-spinal fluid and was regarded as the causal organism. My own case of meningitis, associated with an infra-nuclear paralysis of the left facial nerve, was recorded in this journal in 1914.

The cerebro-spinal fluid showed large numbers of typical influenza bacilli occurring both intra- and extra-cellularly and from this fluid a profuse and pure culture of *Bacillus influenzæ* was grown. No other organism could be found.

The other case I wish to draw attention to was one occurring during the recent pandemic of influenza.

The patient was a medical practitioner with both lungs markedly involved and he was extremely ill.

His sputum literally teemed with influenza bacilli and on cultivation gave practically a pure culture of this organism.

Certainly no other organism could be found of a nature or in sufficient number to be responsible for a most virulent infection. The patient recovered after a somewhat protracted convalescence.

I only wish to say, in conclusion, that cases such as these make it extremely difficult to believe that Pfeiffer's bacillus is not the cause of the pathological condition presented. Had other pathogenic bacteria been present in these cases, one might have been prepared to accept the "rabble" theory, but under the circumstances above, it is difficult to do so with any conviction.

Yours, etc.,

EVERITT ATKINSON.

Department of Public Health,
Perth, August 8, 1922.

## CARBON DIOXIDE SNOW AND RODENT ULCER.

SIR: In a contribution to your journal of August 5 entitled "Diathermy in the Treatment of Malignant Growths," Dr. Kent Hughes, in speaking of rodent ulcer treatment, rightly appreciates—and so do I—the excellence of the diathermic method, but he also definitely depreciates another method, *i.e.*, by carbonic acid snow. This he proceeds to do after stating that he has had no personal experience of its value and that it would be unfair of him to draw any conclusion detrimental to it. It is not in keeping with my clinical observations that, "generally speaking, its employment is futile," nor that "it can only deal with the superficial portion which scars over after treatment and all the time the growth runs riot beneath" and, further, I have always taught that it is not only not true that "small superficial ulcers are often stirred to greater activity," but that it is astonishing how seldom, if ever, that occurs. Dr. Hughes laments the ignorance of the graduate who has never as a student been "more thoroughly instructed to take care and beware of the small ulcers" and senile changes in the rodent ulcer area. Personally I have never ceased to pound year after year into scores of my students at the Melbourne Hospital the tragic potentiality of such lesions. I wish it to be thoroughly understood that I am no advocate of "tinkering" with

carbonic acid snow or any similar substance in true epithelioma and in my printed lectures on diseases of the skin delivered to the students at the Melbourne University, after referring to the various methods of treatment of rodent ulcer and its pre-ulcerous stages, I have stated: "If, however, there is the slightest suspicion that true epithelioma, evidenced by the microscope or by clinical appearances, is present, then—and I wish to be very emphatic on this point—excise straight away, without any delay whatever, by the use of topical applications. Delay, however short, may mean involvement of tissues beyond the scope of medicine or surgery."

I have had such excellent results with solid carbon dioxide in the treatment of rodent ulcer, from the small keratosis in what might be called the pre-rodent stage up to ulceration three-quarters of an inch in diameter, that I am determined to continue its use, but without attempting to depreciate other good methods.

Yours, etc.,

A. W. FINCH NOYES, F.R.C.S. (ED.).

8, Collins Street, Melbourne,
August 12, 1922.

## DRIED MILK.

SIR: As one who for years past has, in view of the very unsatisfactory milk supply, both in town and country, advocated the use of dried milk, I was very glad to read Dr. Graham Butler's letter in your last issue. I confess that when I first started practice I was one of those who adopted the fetish of "fresh cows' milk," but a larger experience has convinced me that in the use of dried milk we get all the virtues and hardly any of the defects of fresh cows' milk. Recent researches have shown again and again that vitamins A and B are not harmed by desiccation and if in the process vitamin C is damaged, as asserted by some, though denied by others, we know that the same element is frequently deficient in mother's milk. Hence, why pædiatrists see every now and again mild cases of scurvy in breast-fed children. Having had years to observe and follow the use of dried milk, especially in Broken Hill, which, according to figures kindly supplied to me by Mr. Knibbs, is one of the three largest cities having the highest proportional birth rate, not in the Commonwealth, but in the world, and where the consumption of preserved milk is very great, I can say I never saw a definite case of rickets or scurvy due to it, though in many cases the recommendation to use fruit or vegetable juices as well was not always followed.

There is probably no food, fluid or otherwise, which in itself is so ready to absorb impurities or become contaminated as fresh milk and it is equally safe to say there is no article of food which is so deliberately adulterated as it. Almost every week we read in the metropolitan papers accounts of prosecutions for deficient solids and added water. To-day's *Argus* contains three such and frequently cases are mentioned in which holes in a leaky can are stopped with soap or dirty rags. The gravest danger in the use of fresh milk is more or less fostered by our local laws, which pay attention only to a chemical and not a bacteriological standard, whereas every practitioner or chemist knows that added water, if pure, or a slight deficiency in solids is not near so serious a danger as bacterial contamination. Judging from samples for examination, much of the milk is little better than more or less diluted sewage and is it any wonder that children brought up on it do badly? Do they get a fair start in life? If there was as much dirt in beer, what an outcry would be raised! Anyone who has taken the trouble to visit various dairies, knows it is the exception for them to be up to date either as to the sheds, the employees or the condition of the cows. When visiting some of these I have inquired if a covered milk pail is ever used and I then am generally asked: "How could the milk get into such a pail?" This article, which reduces the bacterial count very considerably and is so strongly recommended in Great Britain and the United States of America, seems to be unknown here.

When advocating the use of dried milk, I have been asked the very pertinent question: "Would you then prefer a dried peach to a fresh one?" "Certainly," is my answer, "if the fresh fruit be exposed to the same treatment as fresh milk generally is."

Having seen the method of manufacture at one of the "Glaxo" factories from the time the milk is received till it is ready for sale, one cannot but be struck by the extreme cleanliness with which every process is carried out. The packing is done by girls wearing spotless white overalls, suggestive more of an operating theatre than a packing room. The whole atmosphere of the place is one of cleanliness. Nor does this cleanliness start with the factory, for the dairies supplying the milk are subject to inspection and their owners are compelled by their contractors to avoid dirt.

As one whose worries have been lessened by the use of dried milk, I am quite in accord with Dr. Graham Butler when he says: "It is safer to concentrate on the effective use of preserved than to endeavour the direful task of education to the safe habitual use of 'fresh cows' milk.'" What one would like to see, however, is the manufacturer contented with a less profit, so that it could be sold on a larger scale than at present. I believe that increased sales would compensate for reduced prices and it would be a practical way of helping that already frequently overworked mother for whom there are no eight hours or union rates.

Yours, etc.,

JAS. BOOTH.

86, Collins Street, Melbourne,
August 16, 1922.

## PRE-MATERNITY DEPARTMENT AT THE WOMEN'S HOSPITAL, MELBOURNE.

SIR: Dr. Rothwell Adam, in his "Listerian Oration," read at a meeting of the South Australian Branch of the British Medical Association on May 25, 1922, states that the pre-maternity department at the Women's Hospital, Melbourne, is under no direct authority and consequently has no efficient organization.

I might state that this department is completely and efficiently organized and is under direct authority of the obstetrical honorary surgeons. Two mornings per week are given to this work and during the last twelve months 1,875 new patients attended this clinic.

A special history sheet is provided for each patient. On it are recorded full obstetrical history, pelvic measurements, fortnightly examination of the urine and the clinical findings from examination.

Any medical treatment necessary is given and it is a noteworthy fact to record that since the inception of the ante-natal clinic about four years ago no patient has been admitted from that clinic to the obstetrical side suffering from eclampsia. This chart, with the patient's complete ante-natal history and treatment, is available on her admission to the obstetrical side.

Routine Wassermann examinations were made in all cases until the laboratory was unable to cope with the work. Now this examination is limited to suspected cases.

Yours, etc.,

R. N. WAWN,
Senior Honorary Obstetrician, Women's Hospital.

Melbourne, August 17, 1922.

## ASPERMIA.

SIR: Can any of your readers give me any information about the prognosis in cases of absence of spermatozoa? The case is that of a young couple, healthy, married three years and most anxious to have children. The wife has been twice examined by leading gynæcologists, who can find nothing abnormal. I have made three examinations of the husband's seminal fluid, at intervals of two or three weeks, with the result indicated. I can find nothing abnormal in either testis or epididymis. He now asks: "Will they always be absent?" I can find no information in any of the literature, nor can any of my medical acquaintances tell me anything of value. Any help your readers may be able to offer will be most welcome.

Yours, etc.,

"PERPLEXED."

Melbourne, August 17, 1922.

# Proceedings of the Australian Medical Boards.

## QUEENSLAND.

THE undermentioned have been registered under the provisions of *The Medical Act of 1867* as duly qualified medical practitioners:

BOGLE, JAMES, M.B., Ch.M., 1921 (Univ. Sydney), Port Douglas.

GREEN, HARRY, M.B., 1922 (Univ. Sydney), Brisbane.

PARER, VINCENT STANISLAUS, M.B., B.S., 1921 (Univ. Melbourne), Children's Hospital, Brisbane.

PARK, ALEXANDER NORMAN, M.B., Ch.M., 1922 (Univ. Sydney), Brisbane.

SHAW, HUGH KIRKLAND, M.B., Ch.B., 1914 (Univ. Edinburgh), Wondai.

### Amended Notifications.

BEARBLOCK, ARTHUR, M.R.C.S. (Eng.), L.R.C.P. (Lond.), 1920, Brisbane.

CHENOWETH, ERNEST WESLEY, M.B., B.S., 1920, M.D., 1922 (Univ. Melbourne), Mackay.

# Books Received.

THE STEWART LECTURES OF NOVEMBER 14, 18 AND 21, 1921, ON MODERN PSYCHOLOGY, by Professor R. J. A. Berry, M.D., F.R.C.S., F.R.S. (Edin.); Published for the University of Melbourne; 1922. Melbourne, Sydney, Adelaide and Brisbane: Robertson & Mullens, Limited; Demy 8vo., paper cover, pp. 56, with eight figures. Price: 2s. 6d. net.

# Medical Appointments.

DR. J. STEELL (B.M.A.) has resigned his position as Medical Superintendent of the Hospital for the Insane at Yarra Bend in order to engage in private practice at 105, Collins Street, Melbourne.

* * * *

THE undermentioned have been appointed to act at the ports specified as Medical Inspectors of Seamen for the purposes of the *Navigation Act, 1912-1920*: DR. J. I. M. JAMIESON (B.M.A.) at Cairns; DR. T. J. M. KENNEDY (B.M.A.) at Geelong; DR. GREGORY SPROTT (B.M.A.) at Hobart; DR. G. H. HOGG (B.M.A.) at Launceston.

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THE undermentioned have been appointed Government Medical Officers in New South Wales: DR. H. W. CUTHBERT (B.M.A.) at Braidwood; DR. J. MALCOLM (B.M.A.) at Lithgow.

* * * *

DR. W. G. ARMSTRONG (B.M.A.), Director-General of Public Health, Chief Medical Officer of the Government and Inspector-General of Hospitals and Charities in New South Wales, has been appointed also Commissioner under the *Venereal Diseases Act, 1918*, as from July 1, 1922, *vice* DR. R. T. PATON (B.M.A.), resigned.

* * * *

DR. W. B. DOCKER has been appointed Public Vaccinator at Wangaratta, Victoria.

# Medical Appointments Vacant, etc.

FOR announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," page xviii..

ROYAL HOSPITAL FOR WOMEN, PADDINGTON: Resident Medical Officer.

# Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429, Strand, London, W.C..

| BRANCH. | APPOINTMENTS. |
|---|---|
| NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney | Australian Natives' Association<br>Ashfield and District Friendly Societies' Dispensary<br>Balmain United Friendly Societies' Dispensary<br>Friendly Societies Lodges at Casino<br>Leichhardt and Petersham Dispensary<br>Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney<br>Marrickville United Friendly Societies' Dispensary<br>North Sydney United Friendly Societies<br>People's Prudential Benefit Society<br>Phœnix Mutual Provident Society |
| VICTORIA: Honorary Secretary, Medical Society Hall, East Melbourne | All Institutes or Medical Dispensaries<br>Australian Prudential Association Proprietary, Limited<br>Manchester Unity Independent Order of Oddfellows<br>Mutual National Provident Club<br>National Provident Association |
| QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane | Brisbane United Friendly Society Institute<br>Hampden District Hospital, Kuridala, North Queensland<br>Stannary Hills Hospital |
| SOUTH AUSTRALIA: Honorary Secretary, 12, North Terrace, Adelaide | Contract Practice Appointments at Renmark<br>Contract Practice Appointments in South Australia |
| WESTERN AUSTRALIA: Honorary Secretary, Saint George's Terrace, Perth | All Contract Practice Appointments in Western Australia |
| NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington | Friendly Society Lodges, Wellington, New Zealand |

# Diary for the Month.

SEPT. 6.—Victorian Branch, B.M.A.: Branch.
SEPT. 7.—New South Wales Branch, B.M.A.: Nomination of Candidates for Federal Committee.
SEPT. 8.—New South Wales Branch, B.M.A.: Clinical Meeting.
SEPT. 8.—Queensland Branch, B.M.A.: Council.
SEPT. 8.—South Australian Branch, B.M.A.: Council.
SEPT. 9.—Eastern District Medical Association, New South Wales.
SEPT. 12.—New South Wales Branch, B.M.A.: Ethics Committee.
SEPT. 13.—Western Australian Branch, B.M.A.: Council.
SEPT. 13.—Melbourne Pædiatric Society.
SEPT. 14.—Victorian Branch, B.M.A.: Council Meeting.
SEPT. 15.—Central Southern Medical Association (Goulburn), New South Wales.
SEPT. 15.—Eastern Suburbs Medical Association, New South Wales.
SEPT. 19.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
SEPT. 20.—Western Australian Branch, B.M.A.: Branch.
SEPT. 20.—South Sydney Medical Association, New South Wales.
SEPT. 22.—Queensland Branch, B.M.A.: Council.

# Editorial Notices.

MANUSCRIPTS forwarded the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, B.M.A. Building, 30-34, Elizabeth Street, Sydney. (Telephone: B. 4635.)

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